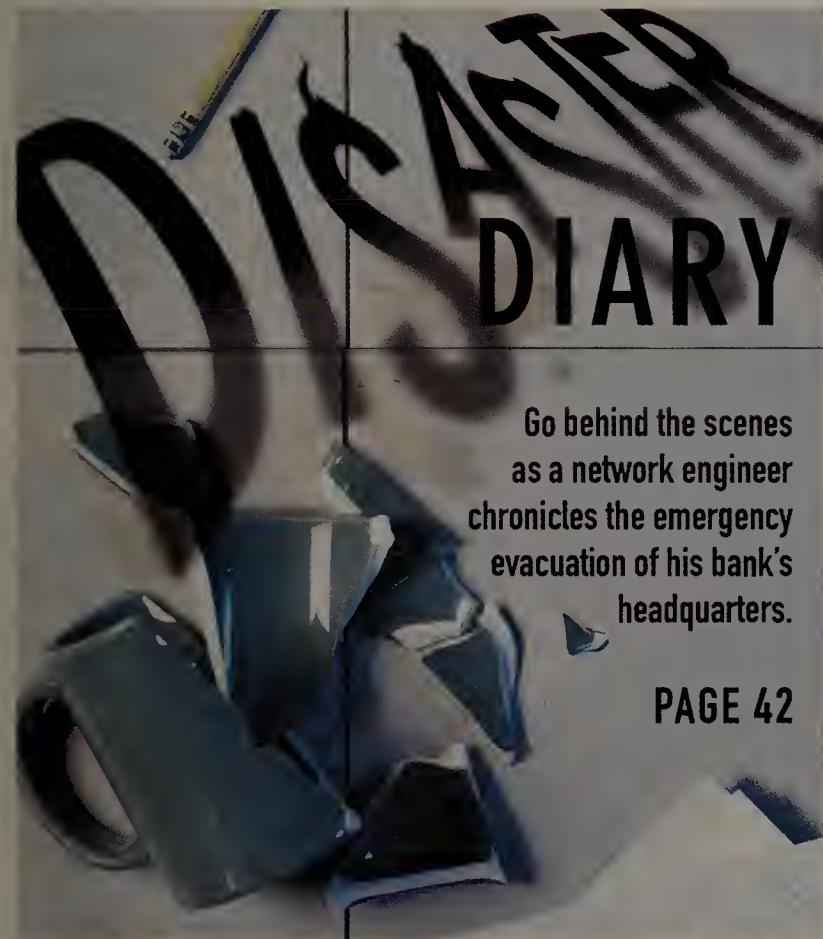




The leader in network knowledge

# NetworkWorld

January 15, 2001 Volume 18, Number 3

The network portal: [www.nwfusion.com](http://www.nwfusion.com)

Go behind the scenes as a network engineer chronicles the emergency evacuation of his bank's headquarters.

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PHOTO: TONY RINALDO

## 'NET BUZZ

### Don't dismiss 'What is it?' mania

We have a tantalizing technology riddle on our hands, provided no one spoils the fun before you read this.

Engineer extraordinaire Dean Kamen's latest invention, code-named Ginger, will do nothing less than change life as we know it, at least according to a trio of high-tech heavies: Amazon's Jeff Bezos, Apple's Steve Jobs and venture capitalist John Doerr, all of whom have seen it work.

Eye rolling is a natural reaction here; I aced Skepticism 101 back in journalism school. However, these are not silly men and they are not alone.

See 'What is it?,' page 70



PAUL MCNAMARA

### Military mulls battening down net hatches

BY ELLEN MESSMER

WASHINGTON, D.C. — Some five years after the military pioneered intrusion-detection systems, the Defense Department may soon require its massive networked systems be protected by round-the-clock intrusion-detection monitoring to defend against hacker or denial-of-service attacks.

The Defense Department is developing a policy that would mandate use of intrusion-detection systems in all military networks. In a move that could have industrywide implications, the agency

See Defense, page 68

## LASER SHOW

Fiberless optical technology emerging as a WAN alternative.

PAGE 28

## Cisco switch users irked

Company blames ASIC shortages for delays of popular Catalyst 6000 box.

BY JIM DUFFY

SAN JOSE — There's a TV advertisement for a candy bar that asks, "Not going anywhere?" and suggests burning idle time by chomping on the bar.

Well there are no snickers among Cisco users trying to get their hands on a Catalyst 6000 LAN switch. Lead times for delivery of the product have ballooned from three weeks to 12 due to a shortage of components from Cisco's suppliers, namely IBM.

The situation is delaying the deployment schedule of some of Cisco's largest customers

and keeping them from building out their networks. The delays could also slow sales and affect the quarterly earnings of the high-tech bellwether and send a ripple effect throughout the industry.

"We are being told of delays of over three months for some

products," says a user at a Fortune 100 high-tech product manufacturer in New England. "[Our] schedule is in trouble because some of the boxes on our shopping list have extremely long lead times. We may wind up lowering our

See Cisco, page 14

## Bush faces thorny 'Net issues

BY CAROLYN DUFFY MARSAN

WASHINGTON, D.C. — George W. Bush did not run for president with a high-tech agenda, but after taking the oath of office on Saturday, he will face several complex Internet policy issues that demand early action, insiders say.

From online privacy to copyright protection and Internet taxation, these issues go to the heart of whether and how the Bush administration will regulate the fast-changing Internet industry.

See Bush, page 69

How do you think the Bush presidency will affect the industry? Sound off in our forum at [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2552.

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mobile business

# NetworkWorld

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Joseph Galli jumps ship ... again.

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Flaws found in Avocent KVM switch.

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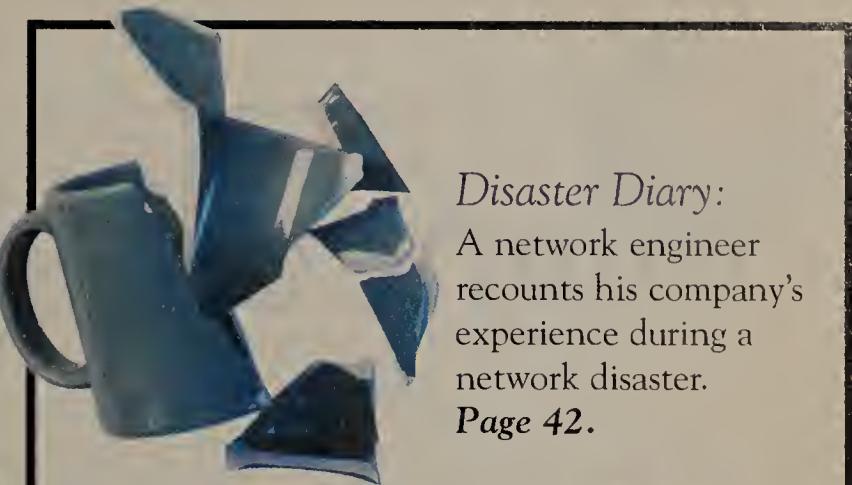


Avici terabit router gets an upgrade.

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**Disaster Diary:**  
A network engineer recounts his company's experience during a network disaster. **Page 42.**



**Telecom Tracker:** ISDN PRI can be a cost-effective way to connect PBXs and dial-up modem banks to the PSTN. **Page 48.**

## Reviews:

**Novell Single Sign-on 2.0:** Eliminates the hassle of end users calling the help desk because they forgot their passwords. **Page 50.**

**Is it smart to buy a smart NIC?** Our performance testing shows that the gains are minimal, unless you're running larger file server transactions. **Page 52.**



## Management

**A plea for civility:** An IT manager challenges peers to change their attitudes. **Page 53.**

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**Ira Brodsky:** Telecom carriers need to smarten up their pipes. **Page 41.**

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**CONTACT US** Network World, 118 Turnpike Road, Southborough, MA 01772; **Phone:** (508) 460-3333; **Fax:** (508) 490-6438; **E-mail:** nwnews@nww.com;

**CIRCULATION:** Phone: (508) 490-6444; **Fax:** (508) 490-6400; **E-mail:** nwcirc@nww.com; **STAFF:** See the masthead on page 12 for more contact information. **REPRINTS:** (717) 399-1900

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## RESEARCH

### From one 'bit-head' to another

Columnist Ed Mier discusses a proposal for achieving universal quality of service for voice over IP. Read all about this in our new "Tester's Choice" column. **DocFinder: 2545**

### Be warned

*Thin-client networks based on Citrix systems?*

You might want to check out tests of the ICA protocol conducted by Tolly Research before you bank your bandwidth on it. **DocFinder: 2546**

### Shortage of skills

One investment management group's answer to the skills shortage is to create a culture where people want to expand their skills. Find out how Bank One did it and check out Skillscape's free download of the Top 200 skills dictionary in our related links. **DocFinder: 2547**

## FORUM

### DHCP duplicates

A user with Cisco Catalyst 6500s and Windows NT 4.0 servers keeps getting duplicate Dynamic Host Configuration Protocol addresses. Suggestions? **DocFinder: 2548**

### 'Net Know-It-All: Play to win



Test your network knowledge with our weekly Net Know-It-All quiz. Just answer all 10 questions correctly, and you'll be entered to win \$500. **DocFinder: 2443**

### Seminars & Events: Networking made easier

You are just one day away from mastering the new network products and services that can make your business more competitive and more profitable. Connect with top experts to simplify Networking For Small and Medium Businesses. Join *Network World* and *PC World* at this exciting event. **DocFinder: 2544**

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- **Newsletter archives** Access past issues of our award-winning series. **DocFinder: 9526**
- **Research centers** Use our tech pages to make sound decisions. **DocFinder: 9527**
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## BARNEY'S RUBBLE

*The best of the NetFlash daily newsletter*



### La-Z-Boy recliner invites you to surf in comfort

I've always maintained that if I had a La-Z-Boy recliner I would be far more obese than I already am. If that theory is correct, then the company's latest chair is a coronary waiting to happen. This little beauty includes a power supply, notebook computer holder and a built-in WebTV. Imagine a telecommuter working from this thing all day? Can you say severe muscle atrophy? **DocFinder: 2540**

### Barnes & Noble digital to link writers and readers

Maybe it's just me, but I'm not too crazy about electronic books like the kind Barnes & Noble is pushing. First off, my ego is far too intertwined with the books I've read, a situation that has me filling bookshelves just so I can show my brain off to my neighbors.

But beyond that, my eyes prefer the clean black type of a well-printed book to the fuzzy backlit nonsense that are today's e-books. Nonetheless, publishers and booksellers are moving into this market with lower prices and new authors, so there is definitely an upside. **DocFinder: 2541**

### A network in every home?

Today, only the geekiest of geeks, the techiest of techies, the nerdiest of nerds and those with the largest propellers on their heads have networks in their homes.

But consumer firms are trying to change all that with products that are easier to set up and control not just printers, but entertainment appliances as well. All you have to do is figure out which of your children to hire as network administrator. **DocFinder: 2542**

— Doug Barney, executive editor, news

**Sign up for this e-mail newsletter online. DocFinder: 3850**

## COLUMNISTS

### Compendium

*The dumbing down of Web sites*

Fusion Executive Editor Adam Gaffin uncovers the hype invasion of ready-made Web design doctrines such as "Don't use drop-down boxes." **DocFinder: 2549**



### Help Desk

*E-mail advice*

Ron Nutter answers a user question on migrating from NetWare to Exchange. **DocFinder: 2550**

### View from The Edge

Find out Edge Managing Editor David Rhode's picks for this year's service provider industry trifecta. **DocFinder: 2551**



## NEWS BRIEFS, JANUARY 15, 2001

## FCC sends AOL, Time Warner a message

The growing importance of instant messaging and its possible status as a major means of communication emerged as one of the top issues in the Federal Communications Commission's approval of the merger of AOL and Time Warner. The FCC last week imposed several conditions on AOL and Time Warner in the field of instant messaging that are designed to avoid a repeat of today's situation in which proprietary instant messaging systems have proliferated and interoperability is almost nonexistent. "We are concerned that we create an open, competitive environment for instant messaging services, and to do this we must have interoperability of what we call the names and presence database," FCC Chairman William Kennard said. The FCC is laying down conditions that center on demonstrating that interoperability exists between AOL and Time Warner's future advanced instant messaging system and competing systems, or that subscribers have alternative systems available to them.



**The FCC's Kennard takes issue with the lack of instant messaging interoperability.**

less carriers previously called the Telecommunications Resellers Association. It did not appear to affect larger competitive local exchange carriers, which rent only part of SBC's network and use their own switches and back-office systems. But because the court technically vacated the FCC's entire merger order, legal experts said the FCC and SBC may now have to consider reworking the merger deal, perhaps by eliminating the data subsidiary as a separate unit, to regain the court's blessing.

## Nortel to cut 4,000 jobs

Nortel Networks said last week it is eliminating 4,000 jobs as part of "streamlining and realignment activities." The cuts are due to overlap from several acquisitions Nortel made over the past year, sources say. They also are due to aligning resources on high-growth markets such as optical and wireless networking, and Internet and e-business initiatives. Nortel's enterprise business has been the laggard in the company's growth. Growth in Nortel's enterprise business has been in the mid- to low single digits, while other initiatives have experienced high double- and even triple-digit growth in recent quarters.

## Win 2000 exec leaves Microsoft

Jim Ewel, who spent 12 years at Microsoft and was most recently head of product marketing for Windows 2000, has joined the



**Microsoft Win 2000 marketing head Jim Ewel has left the company.**

## Web acceleration start-up to close

The volatile stock market and nervous investors have claimed Web acceleration start-up Cyber IQ Systems, which is looking to sell its technology and product lines, *Network World* has learned. Cyber IQ CEO Bill Schroeder says the firm will not pursue new business or financing other than a possible secured loan to assist in selling its technology and product lines. "My focus is to find good homes for the products," he says. As recently as December, Cyber IQ said it would roll out an encryption/decryption device aimed at speeding secure transactions on Web and e-commerce sites. Cyber IQ competes with many vendors in the Secure Sockets Layer processing arena, including, F5, Intel and Sun.

## Ruling clouds SBC/Ameritech merger

The U.S. Court of Appeals in Washington, D.C., sowed confusion last week on the legal status of SBC Communications' 1999 takeover of Ameritech when it ruled that the FCC got a key detail wrong. The FCC had forced SBC to spin off many of its data services into a separate subsidiary, but said the subsidiary did not have to resell its services to competitors. The court ruled the FCC had no authority to relieve any SBC unit of the usual Bell resale obligation. The ruling was a victory for the Association of Communications Enterprises, a group of largely switch-

less carriers previously called the Telecommunications Resellers Association. It did not appear to affect larger competitive local exchange carriers, which rent only part of SBC's network and use their own switches and back-office systems. But because the court technically vacated the FCC's entire merger order, legal experts said the FCC and SBC may now have to consider reworking the merger deal, perhaps by eliminating the data subsidiary as a separate unit, to regain the court's blessing.

## AltaVista delays IPO once again

AltaVista last week again decided to nix plans for an IPO citing "unfavorable conditions in the financial markets." In a filing with the Securities and Exchange Commission, the search engine company requested a formal withdrawal of its registration statement. AltaVista, a unit of CMGI, originally planned an IPO in April, delaying it that time for similar reasons. Last September, the company laid off 225 people, or 25% of its workforce.

## Latest Linux kernel draws positive reviews

BY DENI CONNOR

The newest Linux kernel has a bundle of features that should make it more attractive to companies and better able to compete with the likes of Windows NT and Unix, say those who helped write and test the open source software.

## New Linux 2.4 features

**Linux creator Linus Torvalds released the long-awaited 2.4 Linux kernel earlier this month. It includes the following new features that make it more enterprise-ready:**

- Logical volume manager.
- Supports more than 4.2 billion users.
- Faster I/O.
- Scalability improvements under heavy loads.
- File sizes up to 1 terabyte.
- RAM increased to 64G bytes.
- Support for RAID devices.
- Support for up to 16 Ethernet adapters in the server.
- USB support.
- New file systems.
- Supports up to 20 drives.
- Broadband and DSL capability.



The Linux 2.4 kernel was unveiled on the kernel.org Web site Jan. 4 and distributed to mirror sites for downloading almost immediately. It will likely be a few months before companies such as Caldera and Red Hat start integrating the kernel into their Linux operating system distributions.



**Be a Net Know-It-All**  
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## This week's question:

Which company was once known as United Utilities?

[www.nwfusion.com](http://www.nwfusion.com)

"We do numerical air quality simulation at the NCSC," says Carlie Coats, a senior mathematician at the North Carolina Supercomputing Center in Research Triangle Park, N.C. "Our air quality forecast work uses 24 processors worth of SGI Origin [supercomputers], but we could easily take advantage of an order of magnitude more processing power to generate better forecasts."

The kernel also provides faster I/O to peripheral devices, supports RAID, more Integrated Drive Electronics (IDE) drives and larger file sizes.

The 2.4 kernel supports burst transfers and larger IDE

See **Linux**, page 68



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# KPMG pulls plug on ASP venture with Qwest

Observers say the move is another sign of shakiness in the application service provider market.

BY JENNIFER MEARS

**DENVER** — In a move that illustrates the continuing rocky environment for application service providers, KPMG Consulting has given up a 49% stake in its joint ASP venture with Qwest, deciding it no longer wants to help fund the undertaking.

"A lot of companies right now — ASPs, everyone — are facing the funding [issue]," says Diane Myers, a program manager at Stratecast Partners. "There are limited investment dollars out there, and this just goes to show you don't have to be a small company to have these

issues."

KPMG and Qwest joined hands in 1999 to form Qwest Cyber.Solutions (QCS), bringing together what appeared to be the perfect combination of big players in the ASP arena. KPMG contributed system-integration expertise, methodology, templates, software, help desk facilities and strategic relationships with Oracle and SAP. Qwest provided a worldwide IP-based backbone network and hosting facilities.

But after an initial investment of \$58.3 million and another \$5 million contribution late last fall, KPMG determined QCS, still unprofitable, would continue to

require investments for operation and equipment, and decided not to make any additional capital contributions.

"Outsourcing is a very important component of services we need to be able to offer," says Elizabeth Brooks, a spokeswoman for KPMG. "But it just made more sense for us to do that as an alliance relationship with QCS than to continue to invest in a venture that is really not part of our core business."

On Dec. 27, QCS redeemed KPMG's 49% stake for "a nominal amount," according to documents filed with the Securities and Exchange Commission. While KPMG no longer holds

equity interest in QCS, the two parties have agreed to a strategic marketing relationship, in which KPMG will continue to market QCS services.

"QCS is a very important relationship for us," says Brooks. Indeed, Qwest was one of five strategic partners mentioned in KPMG's IPO filings.

Between its inception in June 1999 and September 2000, QCS reported losses of just under \$65 million — not out of line given that the ASP business requires a lot of investment upfront. Others in the ASP field piled up bigger losses: For the first three quarters of 2000, USinternetworking reported a

net loss of \$129.4 million, Interliant's was \$109.8 million and Corio's was \$80.4 million.

John Charters, QCS' CEO, says the company's encouraging financial results will help QCS if it decides to seek third-party funding, but he emphasizes that parent Qwest's commitment to the ASP venture "is not an issue."

QCS: [www.qwestcybersolutions.com](http://www.qwestcybersolutions.com)

## ASPs

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# Lotus to air knowledge management, mobile access products

BY JOHN FONTANA

**ORLANDO** — IT executives at Lotusphere this week will get a long look at a much-delayed product and a short look at the next versions of the Domino server and Notes client.

Lotus also will reveal new mobile servers and plans for the application service provider (ASP) market, according to sources. The offerings will carry target shipping dates, something Lotus has been unable to hit in the past two years.

"There is not a lot new here," according to one source who requested anonymity, "but it is obvious with the ASP angle that Lotus is exploring new channels to get software out to the corporate world."

The company plans to announce a March 1 ship date for its Domino Knowledge Discovery System, formerly called Raven. The software, which was slated to ship last year, has been plagued by the delay of Discovery Server, its sophisticated search engine.

Raven, however, won't come cheap, costing \$395 per user and \$100,000 per processor.

Lotus also plans to ship Sametime 2.0, the next version of its instant messaging server.

But IT executives thirsting for



**Papows speaks out:** A year after leaving the CEO post at Lotus, Jeff Papows shares his thoughts on Lotus, which this week plans to reveal details of a restructuring ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2543)

the next release of Domino, code-named RNext, will not get much more than feature demonstrations. Those include roaming user and multiuser features, security agents and calendaring/scheduling enhancements on the client. The server includes new monitoring tools, Web administration, policy-based management for users and servers, server access controls and a new installer.

A preview release of RNext will be made available to part-

ners shortly after Lotusphere, and the first public beta-test version is due this spring.

Lotus also plans four new servers for mobile access that will be part of a new Domino Everyplace Server family that will ship by July. The servers will support mobile access to Domino from Wireless Application Protocol phones, PDAs and other devices.

The Access Server is the base model and supports access to mail, calendaring and the address book. It does not support replication. The Synchronization Server adds that feature to the Access lineup. The Enterprise Server adds access to Domino-based applications. The Sametime Everyplace Server provides instant messaging to mobile users. The server family will incorporate current IBM/Lotus offerings, including EasySync for PDA synchronization, Mobile Services for Domino and IBM Mobile Connect.

Lotus will release a Domino Everyplace ASP version later this year.

Lotus will unveil plans to operate as an ASP under the banner of Lotus Collaboration Services. It will host Domino collaboration and messaging services, including instant messaging, e-meetings and online

workplaces, using its Sametime and QuickPlace applications. The company also plans to host a number of collaborative modules users can rent to embed in

their own applications. The beta test of the project will begin this month, but the service won't launch until the third quarter.

Lotus: [www.lotus.com](http://www.lotus.com)

## THIRD-PARTY PRODUCT SAMPLER

**A**s always at Lotusphere, Lotus partners will show off their wares. Here's a sampling:

- IT Factory will introduce a Web-based client interface to the applications that make up its Business Suite, including Sales Force Automation and Customer Service. The applications will be offered as "building blocks" for custom enterprise applications, according to IT Factory officials.

- Trend Micro will ship Scanmail for Lotus Notes 2.5, which adds policy-based filtering and attachment blocking to the virus scanning engine.

- Group Software, which will announce SecureIQ Suite for Lotus Notes, also will offer content filtering plus modules for encrypting and archiving mail.

- Dirig Software will release a Specific Application Manager for Lotus Notes. The agent, which plugs into the company's xPress and RelyENT management software, monitors Domino servers.

- Stampede will ship TurboGold Server to Server 4.0, which features an acceleration engine for server-to-server mail routing. The company also is adding task prioritization that prevents overloaded server CPUs.

— John Fontana

[ CONTENT SWITCHING ]

[ SERVER LOAD BALANCING ]

[ GLOBAL SERVER  
LOAD BALANCING ]

[ CONTENT-AWARE  
SWITCHING ]

[ FIREWALL LOAD BALANCING ]

## HOW INTELLIGENT LOAD BALANCING LOOKS INSIDE.

Perhaps the most intelligent piece of iron ever built, Foundry's ServerIron web switch is the most versatile Layer 2-7 switch purpose-built to manage your Internet traffic. It intelligently distributes traffic across servers, firewalls, caches, even across data centers—and can direct traffic based on application, server load, URL content, or cookies. Brains like this make ServerIron an essential component for your network and server farm. In fact, purchasing it could be one of the smartest moves you'll ever make. Call Foundry Networks at 1.888.TURBOLAN(887-2652), email us [info@foundrynet.com](mailto:info@foundrynet.com) or go to [www.foundrynetworks.com/nwlsi](http://www.foundrynetworks.com/nwlsi), and make the intelligent choice.



**FOUNDRY**  
NETWORKS

# Ellacoya customizes broadband services

Service providers could give each end user unique, self-provisioning service package.

BY TIM GREENE

SANTA CLARA — Imagine letting department managers decide on the fly whether to set up videoconference links, then ordering such links via a desktop Web portal. And then imagine a service provider instantly setting up the links without bothering your corporate IT staff.

That is the kind of service Time Warner Telecom is dreaming of delivering based on new hardware and software being built by start-up Ellacoya Networks.

Time Warner sees the possibility of creating network-based personal profiles of individuals at customer sites and giving these end users Web access to custom packages of services

and applications. They would be able to select from these packages and turn on new services at will, according to Michael Rouleau, a senior vice president for Time Warner Telecom.

Time Warner has just analyzed Ellacoya's Service Genera-

tion System but is intrigued and could test it out over the next six to nine months, he says.

Ellacoya's system, being unveiled today at the Supernet trade show in Santa Clara, lets service providers draw together bundles of services from

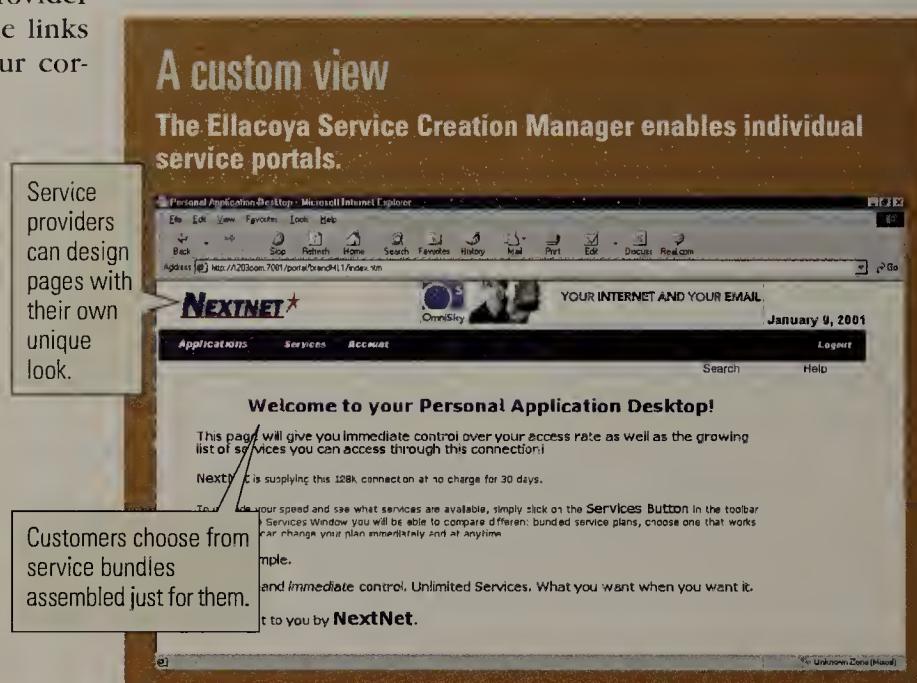
their own portfolios and from other providers and present them as if they come from a single source.

This is done using Ellacoya's service-generation switches, the SGS 44000 and SGS 6000, hardware that sits at carrier points of presence and connects customers to the applications they subscribe to.

When a customer calls for a service, an Ellacoya switch checks with service provider directories to confirm the customer is eligible. The switch then makes the connection to, for example, an application service provider to access the application the customer wants.

Service providers use software from Ellacoya to create Web portals for customers that display a list of available services. In a corporate setting, IT executives would choose what options appear on each end user's personal portal.

Ellacoya: [www.ellacoya.com](http://www.ellacoya.com)



## SuperNet broadband show debuts this week

BY TIM GREENE

SANTA CLARA — SuperNet 2001, a broadband-only trade show debuting this week, will feature the latest gear that can generate voice and data services over broadband access lines such as DSL and cable.

Upstart companies particularly seem to have embraced the new show to launch gear that will help carriers deliver and track the many services they can send via high-bandwidth connections to customers.

For instance, General Bandwidth will show ways to speed the provisioning of voice services over broadband links, while start-up Atoga Systems will demonstrate equipment to efficiently map customer IP flows onto metropolitan fiber networks.

General Bandwidth will announce steps it has taken to make it quicker to set up voice-over-broadband connections such as DSL or cable modems. The firm makes a gateway that

connects packet voice traffic from customer sites to traditional phone networks.

The company's GenView element management system for its G6 Voice Over Broadband Gateway can be managed using service providers' existing operations and support software. Without such capabilities, providers would spend more time setting up services machine by machine from separate management platforms.

Also, General Bandwidth is announcing partnerships with CoManage, Efficient Networks and Nightfire Software to provision voice-over-broadband services from one software platform for carriers that are building new networks and have no existing operations and support platform.

Atoga is introducing its metropolitan-area network gear called Optical Applications Router (OAR) 5, which it says will let corporate customers buy per-application service-level agreements (SLA) from

providers that carry traffic on metropolitan optical rings.

Customers can also expect service providers to bill not only on what application is being used but also on how long it is used, according to Aberdeen Group analyst Andrew McCormick.

Available in March, OAR 5 is made up of an IP router, SONET multiplexer and wave division multiplexer, making it possible to quickly provision all three layers at once.

Gotham Networks will show SmartService Control management software that can generate reports for corporate customers about how well service providers using Gotham gear meet SLAs.

These reports can be compiled from data gathered by SmartService Control in the course of managing Gotham's switches. These devices are in carrier networks and combine the functions of frame relay and ATM switches as well as routers in one box, reducing the complexity of service provider nets.

Gotham will also demonstrate its new offering, GN 400, a scaled-down version of its larger GN 16000 switch.

NexTone will introduce Presence Server, service provider software that lets telephone customers screen phone calls and route them to different numbers on the fly. Customers dictate where the calls are directed by altering their customer profile via phones, PDAs and Internet-connected PCs.

Using any of these access methods, customers tell the network where they can be found. Calls to their primary phone number are completed to the designated phone. Using caller ID, certain callers can be screened out and directed to voice mail. □

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# B2B marketplaces struggle to find top guns

BY KATHLEEN OHLSON

The business-to-business marketplace industry is undergoing seismic changes, and potential senior executives once dazzled by the allure of Internet dollars are staying at or returning to their old-economy jobs.

That's the consensus of industry experts on the heels of last week's departure of VerticalNet CEO Joseph Galli, who will take a similar position at Newell Rubbermaid, a firm that produces storage containers, cleaning products and cookware.

"There's a general shortage of senior management in the e-business area . . . because there's a lot of paranoia that's driving the market down," says Michael Handley, an analyst at Giga Information Group. "If I

was senior talent sitting in a brick-and-mortar, and I was taking a look at what's going on with dot-coms, I know I wouldn't be willing to take that risk now."

Not everyone is that cautious, of course. Last week, energy marketplace TradeRanger named Claire Farley its CEO, while plastics marketplace Omnexus named Peter Dunning to the same position.

The most-talked-about CEO vacancy is at Covisint, which has yet to name a chief executive since debuting last summer. Members of the auto exchange formed by Ford, Daimler-Chrysler and General Motors last year announced a few deadlines for a CEO coronation only to see those dates pass.

Analysts say Covisint's CEO



**Joseph Galli** went back to the old economy last week, leaving his post as CEO at VerticalNet to take a similar position at Newell Rubbermaid.

search is facing myriad problems.

"The [exchange's] power is

shared between three companies that are fierce competitors," says Glenn Gow, CEO of Crimson Consulting. There are also technology issues, specifically about how to protect confidential information among the partners. "Who would want to be the CEO? It's nearly an impossible job," Gow says.

Covisint spokesman Tom Hill says the auto exchange "has come close a couple of times" to naming a CEO, but finding a technology-savvy candidate who is familiar with the industry is "a tall order."

Even among the marketplaces with leaders in place, "there are those that are lacking qualified top executives," Gow maintains, although he declines to cite examples.

Part of the problem is senior

executives don't understand aspects of business-to-business marketplaces, especially collaborative commerce, analysts say.

This has marketplaces choosing candidates who are either entrenched in their particular industry or in the general Internet technology world. Mark Walsh, VerticalNet's chairman, says marketplaces by default are choosing candidates from the industry they serve. "It's human nature" because they speak the same language, he says.

Analysts say executives will watch the Internet shakeout and ready their resumes for the survivors.

"We peaked and it was a glorious peak, but it's like a bad acid trip now," says Vernon Keenan, an analyst at Keenan Vision. "We need to all chill." □

**Cisco,**  
continued from page 1

standards to buy equipment that is at least available. This hardly engenders loyalty to the Cisco line."

The Catalyst 6000 has annual bookings of \$5 billion, according to Cisco. The Layer 3 switch has quickly become Cisco's flagship line since its introduction two years ago and is the foundation of Cisco's infrastructure offerings for converged IP telephony networks. The Catalyst 6000 competes with Foundry Networks' BigIron, Extreme Networks' BlackDiamond, Enterasys Networks' Smart-Switch Router and Nortel Networks' Passport 8600 offerings.

PeopleSoft in Pleasanton, Calif., is a large Catalyst 6000 shop that has had to rely on Cisco distributors because it cannot get the switch fast enough directly from Cisco.

"We had a couple of orders that got strung out before we realized what was going on," says Stan Christensen, PeopleSoft director of network engineering. "Cisco suggested that we keep a second partner in line as far as someone who keeps certain stuff in stock. So we've been addressing it by just going to some of the channel and picking up product there."

Another user is working closely with Cisco to lessen the impact of the long lead time.

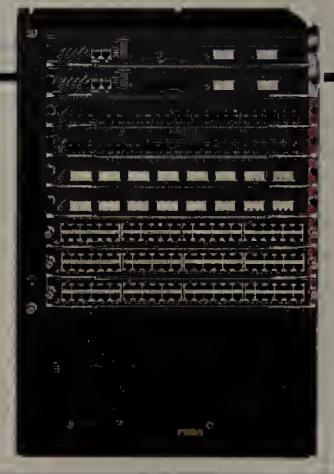
"This is a popular switch and it seems everyone wants one," says Doyle Friskney, director of communications and network systems at the University of Kentucky in Lexington. "Our salesman takes great efforts to lower our quoted lead times to ensure we can complete our project on time."

Wall Street investment firm UBS Warburg says the lengthy lead time is due to a lack of

firm stated in a recent report.

Cisco would neither confirm nor deny that IBM is a supplier for the Catalyst 6000. IBM confirmed that it does supply microelectronics to Cisco but would not comment on the Catalyst 6000 specifically, nor on this particular situation.

But Cisco did acknowledge that a component shortage situation is behind the extended lead times that some customers — not all — may experience.



## Not coming so soon to a network near you

### Catalyst 6000:

- Features a 256G bit/sec backplane.
- Is Cisco's feature platform for packetized voice and "application-aware" switching.
- Sports 130 Gigabit Ethernet ports and Layer 3 capabilities.

Application Specific Integrated Circuits from IBM, which have been on allocation for the past few months. But availability of these components has "greatly improved" in the last month, the firm notes.

"This should help Cisco more easily ship its Catalyst 6000 series of products," the

"[The lead time] is dependent on the requirements of customers and the configuration and solution they're looking to deploy," says Ed Chapman, director of marketing for the Catalyst 6000. "In worst cases it can be 10 to 12 weeks currently, but many customers are receiving products ahead of this."

To ensure a ready supply of components and to reduce lead times, Cisco has signed long-term agreements with suppliers and has invested in additional manufacturing capacity, Chapman says.

"We have strong commitments from our suppliers and feel, based upon their feedback, that we can anticipate a decline in our lead times to customers over the next few months," Chapman says. "In general, we are seeing solid improvement in lead times overall."

Chapman says Cisco has not seen a decline in Catalyst 6000 sales due to the component shortage/lead time issue although Cisco CEO John Chambers did say last week that Cisco's current quarter has been more challenging than anticipated due to overall economic conditions.

Indeed, UBS Warburg has seen a slowdown in overall sales through Cisco distributors, which may be due in part to the long lead time for the Catalyst 6000.

"Our research suggests there have been some signs of some slowing of sales through distributors," the firm stated in its report. "This may be more alarming, as it may indicate a slowing in demand. It may also indicate lack of availability of high-end products like the Catalyst 6000 series

given certain component shortages."

UBS has lowered its second-quarter 2001 revenue projections for Cisco from \$7.17 billion to \$7.04 billion.

Other analysts, however, say strong demand may actually be the culprit behind the lead time situation, which they say can be much longer than 12 weeks.

"I had a major Cisco customer telling me they had seen lead times as long as six months for the Catalyst 6000," says Dave Passmore, research director at The Burton Group.

"It wasn't that Cisco was having problems, it was simply that growth on the demand side had occurred. Catalyst 6000 is a \$5 billion line of business for Cisco with an annual growth rate of over 200%. Customer demand has grown more quickly than Cisco's ability to build the things and ship them out the door."

All of this is little solace to the user at the high-tech company in New England.

"We are a Cisco shop and need a steady flow [of] switches on demand," he says. "Is there a light at the end of the tunnel? Just how long are we supposed to tolerate this?" □

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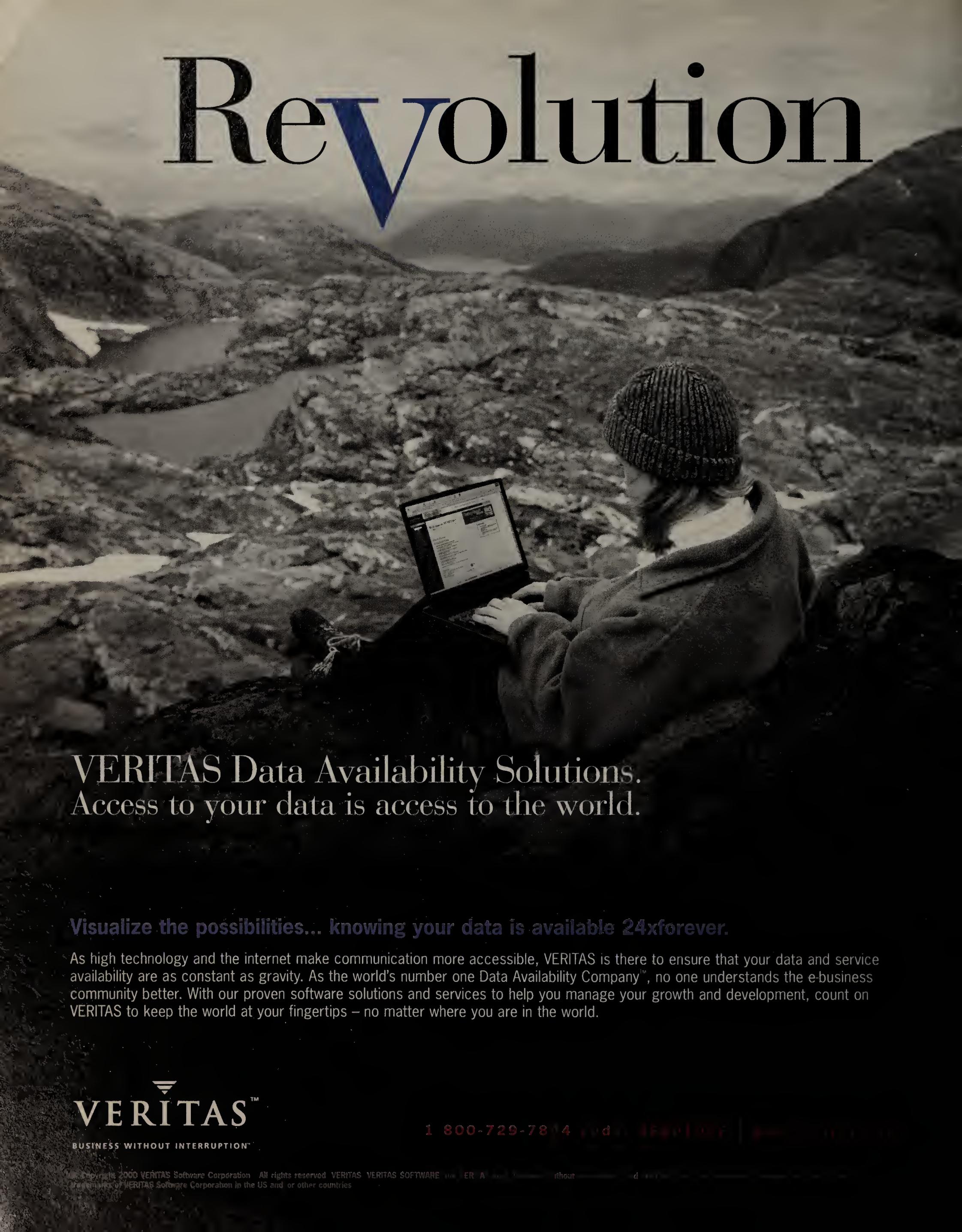
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B101

## I. What is the principal business activity at your location? (check ONE only)

01. <input type="checkbox"/> Manufacturing (other)	10. <input type="checkbox"/> Education	18. <input type="checkbox"/> Other (please specify) _____
02. <input type="checkbox"/> Finance/Banking	11. <input type="checkbox"/> Government/Military/Aerospace	
03. <input type="checkbox"/> Insurance/Real Estate/Legal	12. <input type="checkbox"/> Consulting (Independent)*	
04. <input type="checkbox"/> Health Care Services	13. <input type="checkbox"/> Communications Carriers	
05. <input type="checkbox"/> Hospitality/Entertainment/Recreation	14. <input type="checkbox"/> ISP	
06. <input type="checkbox"/> Media/TV/Cable/Radio/Print	15. <input type="checkbox"/> ASP	
07. <input type="checkbox"/> Retail/Wholesale Trade/Business Services	16. <input type="checkbox"/> Manufacturing (Computer/Communications/OEM)	
08. <input type="checkbox"/> Transportation	17. <input type="checkbox"/> Resellers/VARs/VADs/Integrators/Distributors* (Computers/Communications)*	

\*Attn Consultants, Integrators, Distributors, Resellers: Please complete form based on ALL clients and your own business needs

## 2. P: What is your primary job function? (check ONE only)

## S: What is your secondary job function? (check ALL that apply)

P S	P S	P S
<input type="checkbox"/> 1. <input type="checkbox"/> Network Management	<input type="checkbox"/> 5. <input type="checkbox"/> Internet/Intranet/E-commerce Management	<input type="checkbox"/> 8. <input type="checkbox"/> Consultant (Independent)
<input type="checkbox"/> 2. <input type="checkbox"/> LAN Management	<input type="checkbox"/> 6. <input type="checkbox"/> Engineering Management	<input type="checkbox"/> 9. <input type="checkbox"/> Other (please specify) _____
<input type="checkbox"/> 3. <input type="checkbox"/> Datacom/Telecom Management	<input type="checkbox"/> 7. <input type="checkbox"/> Corporate Management (CEO, COO, CFO, Pres., VP, Dir., Mgr.)	
<input type="checkbox"/> 4. <input type="checkbox"/> CIO/CTO/AS/IT/MIS/Systems Management		

## 3. What is the estimated value of Network equipment and services that you specify, recommend, or approve the purchase of? (Please print the appropriate number code on the line next to each product category. Please complete ALL categories A-O.)

1. \$100 Million or more	A <input type="checkbox"/> Large Systems (Mainframes/Minis)	H <input type="checkbox"/> Internetworking (including Routers, Switches)
2. \$50 Million to \$99.9 Million	B <input type="checkbox"/> Desktops (Micro/Laptops/Workstations)	I <input type="checkbox"/> Internet/Web/E-commerce
3. \$25 Million to \$49.9 Million	C <input type="checkbox"/> Mobile (including PDAs, Wireless)	J <input type="checkbox"/> Intranet/Extranet
4. \$10 Million to \$24.9 Million	D <input type="checkbox"/> Servers	K <input type="checkbox"/> Remote Access
5. \$1 Million to \$9.9 Million	E <input type="checkbox"/> LANs	L <input type="checkbox"/> Peripherals
6. \$100,000 to \$999,999	F <input type="checkbox"/> WAN Equipment	M <input type="checkbox"/> Software
7. \$50,000 to \$99,999	G <input type="checkbox"/> Carrier Services	N <input type="checkbox"/> Services/Support
8. Under \$50,000		O <input type="checkbox"/> Storage
9. None of the above		

## 4. What is the total number of sites for which you have purchase influence? (check ONE only)

1.  100+ 2.  50 to 99 3.  20 to 49 4.  10 to 19 5.  2 to 9 6.  1 7.  None

## 5. What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (check ONE box in each column)

SOURCES		CLIENTS		LANs	
At Location	Entire Org.	At Location	Entire Org.	At Location	Entire Org.
A	B	C	D	E	F
<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>
<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>
<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>
<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>
<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>
<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>
<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>
<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>

## 6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check ONE only)	B. Involvement (check ALL that apply)
CORPORATE:	
1. <input type="checkbox"/> Entire Enterprise/Multiple Enterprises	1. <input type="checkbox"/> Create Network/IT Strategy
2. <input type="checkbox"/> Division/Multiple Divisions	2. <input type="checkbox"/> Recommend/Specify Brand
3. <input type="checkbox"/> Department	3. <input type="checkbox"/> Approve Purchase
4. <input type="checkbox"/> None	4. <input type="checkbox"/> Evaluate Products/Services
	5. <input type="checkbox"/> Determine the Need
	6. <input type="checkbox"/> None

## 7. What is the estimated number of employees at your location/in entire organization? (check ONE in each section)

A. At your location:	B. Entire organization:
1. <input type="checkbox"/> Over 20,000	6. <input type="checkbox"/> 500 - 999
2. <input type="checkbox"/> 10,000 - 19,999	7. <input type="checkbox"/> 250 - 499
3. <input type="checkbox"/> 5,000 - 9,999	8. <input type="checkbox"/> 100 - 249
4. <input type="checkbox"/> 2,500 - 4,999	9. <input type="checkbox"/> 99 or less
5. <input type="checkbox"/> 1,000 - 2,499	10. <input type="checkbox"/> Over 20,000
	11. <input type="checkbox"/> 10,000 - 19,999
	12. <input type="checkbox"/> 5,000 - 9,999
	13. <input type="checkbox"/> 2,500 - 4,999
	14. <input type="checkbox"/> 500 - 999
	15. <input type="checkbox"/> 100 - 249
	16. <input type="checkbox"/> 99 or less

8.

Please indicate the Internet/Intranet/WAN/LAN/Remote products/services that you are currently involved in purchasing or plan to purchase (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET		A B		A B	
<input type="checkbox"/> 01. <input type="checkbox"/> VPN Equipment	<input type="checkbox"/> 07. <input type="checkbox"/> Web Hosting	<input type="checkbox"/> 13. <input type="checkbox"/> Web Based Collaboration/Groupware			
<input type="checkbox"/> 02. <input type="checkbox"/> VPN Services	<input type="checkbox"/> 08. <input type="checkbox"/> Content Hosting	<input type="checkbox"/> 14. <input type="checkbox"/> Web Acceleration/Caching/Load Balancing Products			
<input type="checkbox"/> 03. <input type="checkbox"/> Firewalls/Security/Encryption	<input type="checkbox"/> 09. <input type="checkbox"/> Traffic Management				
<input type="checkbox"/> 04. <input type="checkbox"/> Electronic Commerce Tools	<input type="checkbox"/> 10. <input type="checkbox"/> Web Development Tools				
<input type="checkbox"/> 05. <input type="checkbox"/> Web Servers/Software	<input type="checkbox"/> 11. <input type="checkbox"/> Management/Monitoring Software	<input type="checkbox"/> 15. <input type="checkbox"/> Other Internet/Intranet			
<input type="checkbox"/> 06. <input type="checkbox"/> Internet Services	<input type="checkbox"/> 12. <input type="checkbox"/> Web Based Management Tools				

LANs/INTERNETWORKING		A B		A B	
<input type="checkbox"/> 16. <input type="checkbox"/> Local-Area Networks	<input type="checkbox"/> 26. <input type="checkbox"/> Layer 4-7 Switches	<input type="checkbox"/> 34. <input type="checkbox"/> Hubs/Intelligent Hubs/Stackable Hubs			
<input type="checkbox"/> 17. <input type="checkbox"/> Network Operating System Software (NOS)	<input type="checkbox"/> 27. <input type="checkbox"/> ATM Switches	<input type="checkbox"/> 35. <input type="checkbox"/> Cables, Connectors, Baluns			
<input type="checkbox"/> 18. <input type="checkbox"/> Intel Based Servers	<input type="checkbox"/> 28. <input type="checkbox"/> Token-Ring Switches	<input type="checkbox"/> 36. <input type="checkbox"/> Management Frameworks			
<input type="checkbox"/> 19. <input type="checkbox"/> Intel Based Multiprocessor Servers	<input type="checkbox"/> 29. <input type="checkbox"/> Network Storage (NAS, SANs)	<input type="checkbox"/> 37. <input type="checkbox"/> Call Center Tools			
<input type="checkbox"/> 20. <input type="checkbox"/> RISC Based Servers	<input type="checkbox"/> 30. <input type="checkbox"/> Storage/Backup (Optical, Disk, Tape, RAID)	<input type="checkbox"/> 38. <input type="checkbox"/> Voice over LAN			
<input type="checkbox"/> 21. <input type="checkbox"/> Clustered Servers	<input type="checkbox"/> 31. <input type="checkbox"/> Network Test/Diagnostic Tools	<input type="checkbox"/> 39. <input type="checkbox"/> Other Local-Area Network/Internetworking			
<input type="checkbox"/> 22. <input type="checkbox"/> Print Servers	<input type="checkbox"/> 32. <input type="checkbox"/> UPS				
<input type="checkbox"/> 23. <input type="checkbox"/> Routers	<input type="checkbox"/> 33. <input type="checkbox"/> Network Interface Cards (NICs, PCMCIA)				
<input type="checkbox"/> 24. <input type="checkbox"/> Layer 2 Switches					
<input type="checkbox"/> 25. <input type="checkbox"/> Layer 3 Switches					

REMOTE/WIRELESS		A B		A B	
<input type="checkbox"/> 40. <input type="checkbox"/> PDAs	<input type="checkbox"/> 42. <input type="checkbox"/> Remote Access Services	<input type="checkbox"/> 44. <input type="checkbox"/> Other Remote/Wireless			
<input type="checkbox"/> 41. <input type="checkbox"/> Remote Access Products	<input type="checkbox"/> 43. <input type="checkbox"/> Wireless Data Equipment/Services				

WAN EQUIPMENT & SERVICES		A B		A B	
<input type="checkbox"/> 45. <input type="checkbox"/> Modems	<input type="checkbox"/> 51. <input type="checkbox"/> FT-T/T-1/T-3 Services	<input type="checkbox"/> 58. <input type="checkbox"/> Managed LAN/Router Services			
<input type="checkbox"/> 46. <input type="checkbox"/> Cable Modems	<input type="checkbox"/> 52. <input type="checkbox"/> xDSL Services/Products	<input type="checkbox"/> 59. <input type="checkbox"/> Fax Servers/Services			
<input type="checkbox"/> 47. <input type="checkbox"/> Asynchronous Transfer Mode (ATM)	<input type="checkbox"/> 53. <input type="checkbox"/> Diagnostic/Test Equipment	<input type="checkbox"/> 60. <input type="checkbox"/> Other WAN Equipment/Services			
<input type="checkbox"/> 48. <input type="checkbox"/> Frame Relay Equipment including FRAD5	<input type="checkbox"/> 54. <input type="checkbox"/> DSU/CSU				
<input type="checkbox"/> 49. <input type="checkbox"/> Frame Relay Services	<input type="checkbox"/> 55. <input type="checkbox"/> PBXs				
<input type="checkbox"/> 50. <input type="checkbox"/> ISDN Equipment/Services	<input type="checkbox"/> 56. <input type="checkbox"/> Voice/Video over IP Gateways				
	<input type="checkbox"/> 57. <input type="checkbox"/> Videoconferencing				

9. Please indicate the Network hardware/software/services that you are currently involved in purchasing or plan to purchase: (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

SYSTEMS/PERIPHERALS		A B		A B	
<input type="checkbox"/> 01. <input type="checkbox"/> Laptops/Notebooks	<input type="checkbox"/> 05. <input type="checkbox"/> Storage/Backup (Optical, Disk, Tape, RAID)	<input type="checkbox"/> 08. <input type="checkbox"/> Minis			
<input type="checkbox"/> 02. <input type="checkbox"/> PCs	<input type="checkbox"/> 06. <input type="checkbox"/> Printers	<input type="checkbox"/> 09. <input type="checkbox"/> Mainframes			
<input type="checkbox"/> 03. <input type="checkbox"/> Windows Terminals/Thin Clients	<input type="checkbox"/> 07. <input type="checkbox"/> Printer/Fax/Copier Hybrids (Multifunction Printers)	<input type="checkbox"/> 10. <input type="checkbox"/> Fax/Modem Boards			
<input type="checkbox"/> 04. <input type="checkbox"/> Workstations		<input type="checkbox"/> 11. <input type="checkbox"/> Memory/Chips/Boards/Cards			

SOFTWARE/APPLICATIONS		A B		A B	
<input type="checkbox"/> 13. <input type="checkbox"/> Network Management (incl. SNMP)	<input type="checkbox"/> 20. <input type="checkbox"/> Groupware	<input type="checkbox"/> 27. <input type="checkbox"/> Document Management			
<input type="checkbox"/> 14. <input type="checkbox"/> Systems Management	<input type="checkbox"/> 21. <input type="checkbox"/> E-Mail	<input type="checkbox"/> 28. <input type="checkbox"/> Site Metering Tools			
<input type="checkbox"/> 15. <input type="checkbox"/> Security	<input type="checkbox"/> 22. <input type="checkbox"/> Enterprise Resource Planning (				

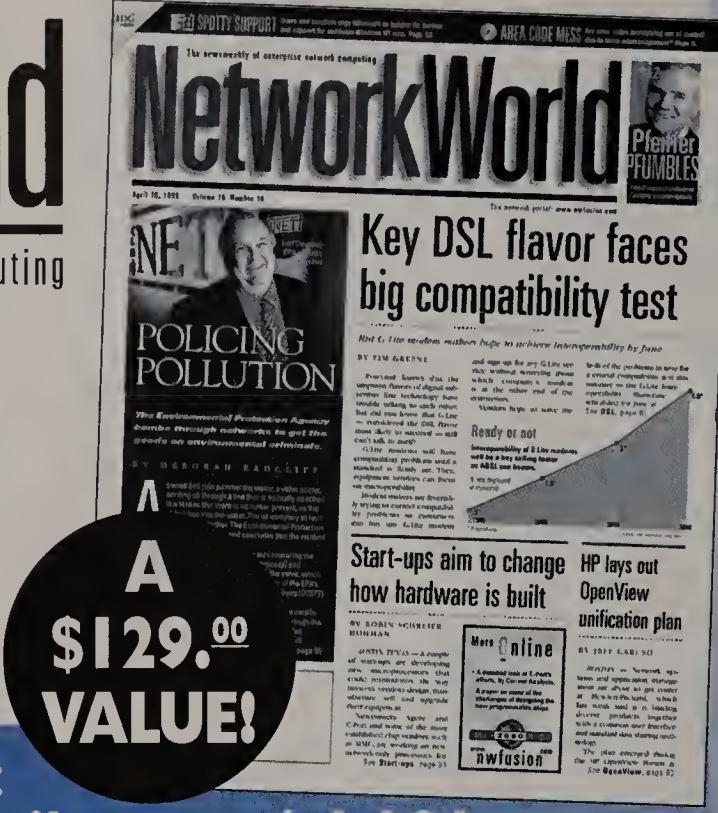
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# Infrastructure

**TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage**

## Briefs

**Motorola and PacketVideo** last week said they will combine to equip mobile devices, including Internet-enabled wireless phones and handheld devices, with full-motion video and audio content. The technologies will be based on the Java 2 Platform, Micro Edition, which is Java for embedded or mobile devices.

Motorola: [www.mot.com](http://www.mot.com); Pack-  
etVideo: [www.packetvideo.com](http://www.packetvideo.com)

**U.S. Robotics** has announced a suite of wireless products, including its first 802.11b wireless peer-to-peer network. The suite includes the Wireless Access Point, Wireless PC Card and Wireless PCI Adapter. The PCI Adapter or PC Cards can be linked to create a peer-to-peer net that lets three computers simultaneously share Internet access, files and printers. The Access Point can support 20 users. Users can connect wirelessly at up to 11M bit/sec from as far as 300 feet. Available now, the Wireless PC Card with built-in antenna costs \$149, the Wireless PCI Adapter with built-in antenna \$189, the Wireless Network Combination Set (Wireless PC Card and Wireless PCI Adapter) \$299 and Wireless Access Point \$399.

U.S. Robotics: [www.usrobotics.com](http://www.usrobotics.com)

**Hewlett-Packard** has introduced a magneto-optical jukebox with 75% more storage capacity and 30% better performance than HP's other jukeboxes. The Sure-store Magneto-Optical jukebox has a capacity of 9.1G bytes and is designed for long-term, durable and permanent storage. It offers SCSI and Fibre Channel connections to a server or storage-area network and a transfer rate of 6.1M bit/sec. Users can upgrade 2.6G- or 5.2G-byte jukeboxes to the 9.1G-byte box. It starts at \$8,000 and is available now.

HP: [www.hp.com](http://www.hp.com)

## Avaya expands its VPN family

BY PHIL HOCHMUTH

**A**vaya had an eye toward bolstering its VPN equipment family for enterprise and service provider customers when it acquired VPN start-up VPNet Technologies for approximately \$120 million last week.

The firm will roll VPNet's line of VPN gateways and management software into its converged network product line for enterprise nets, which includes the Cajun Ethernet switch line, along with its Definity and Eclips IP telephony products. The additional VPN technology could lead to improved security of voice-over-IP traffic in companies whose buildings are dispersed but connected via voice over IP. Avaya will continue to offer VPNet products to firms interested in installing VPNs only.

Improving its VPN offerings could help Avaya keep pace with other enterprise vendors, such as 3Com and Cisco, which already have their own VPN offerings. The acquisition also gives Avaya more presence in a market that analysts expect to explode over the next few years.

Avaya will gain VPNet's VSU line of VPN gateway products, which provide

high throughput for encrypted VPN traffic, and support authentication via RADIUS servers, SmartCard and SecureID or digital certificates.

Avaya's VPN product line includes the Access Point VPN routers, the QVPN policy manager, SuperPipe routers with VPN capabilities, the VPN Firewall product family and an IP Security client.

Graham Celine, an Avaya vice president, says VPNet's product line is more expansive than what Avaya has now, with gateway products for small office/home office enterprise and service provider markets. The technology is also more refined, he adds, because VPNet's roots are in VPN technology. Avaya's products include quality-of-service features for VPNs, while VPNet's have superior encryption and throughput, VPN management and client software.

Celine says Avaya will continue to market its existing VPN products and the acquired products, with plans to integrate the technologies down the road. Avaya will fold VPNet's engineering team into its enterprise product group. Celine won't say when customers could expect new products with combined technology.

While Avaya will offer VPNet products

### Avaya's VPN push

In acquiring VPNet, Avaya gains improved VPN encryption in hardware and better client technology.

#### Avaya's VPN lineup:

- Access Point 1000 and 450 VPN routers.
- Access Point QVPN policy manager for carriers.
- SuperPipe 155 and 95 routers with integrated VPN technology.
- VPN Firewall device.
- IPSec client.

#### VPNet's lineup:

- VSU VPN gateway family.
- VPN remote client.
- VPN manager policy manager.

for customers interested only in a VPN, the company will push the technology as part of its broader converged network strategy.

According to Infonetics Research, the worldwide market for VPN products and services will jump from an estimated \$5.1 billion in 2000 to \$35.9 billion in 2004.

Avaya: [www.avaya.com](http://www.avaya.com)

## High-capacity NAS device on tap from Procom

BY DENI CONNOR

**IRVINE, CALIF.** — Procom Technology is expected to launch a new high-end, network-attached storage appliance this week that lets heterogeneous enterprise customers share, consolidate and manage their storage resources.

The NetForce 3100HA is a scalable, high-availability NAS device with an initial capacity of more than four terabytes that customers can grow as their storage requirement increases. This can be done by inserting 36G- or 73G-byte drives into the rack-mount enclosure without taking the system down. The system also has fault-tolerant features such as redundant fans and RAID controllers. To connect it to the



Procom's NetForce 3100HA supports more than four terabytes of storage and is easily expandable to more than 16 terabytes.

network, the NAS appliance has a 10/100/1000M bit/sec Ethernet adapter.

The NetForce is the entry-level model of Procom's storage family. In Windows NT networks it makes use of access control lists (ACL) and NT's multiple master domain architecture. ACLs are lists of users who are allowed to access the server and the access rights they have; the multiple master domain architecture is used in geographically separated midsized and large corporations to house the security and access rights for users.

The NetForce supports the Unix Network File System and Microsoft's NFS, as well as the Network Data Management Protocol, the

newest standard for LAN-free backup. It is designed to scale to over 16 terabytes.

The NetForce will compete against file servers from Network Appliance and EMC. The Network Appliance 840 scales to over 4.5 terabytes. EMC's ip4700 has an upper capacity of 3.6 terabytes.

But it was the new device's easy installation and cost that attracted Varco, an oil and gas company in Houston.

"We put our [enterprise resource planning] system on a Network Appliance server originally," says Cory Lucas, network administrator for Varco. "It took a long time to install and was complex. We looked at a couple of alternatives, but they didn't offer us the storage capacity we wanted. The 3100 was a 15-minute install into our Windows NT environment at one-third the price of the Network Appliance product," Lucas says.

The NetForce 3100HA NAS appliance is available starting at \$42,000.

Procom: [www.procom.com](http://www.procom.com)

# Flaws mar digital keyboard, video, monitor switch

Avocent DS1800 needs some software improvements before it becomes ready for the enterprise.

BY DAVID STROM

Keyboard, video and monitor switches have been around for many years and can help clear out the clutter on equipment racks in your server room. But these switches have their limitations: You need to locate them near your servers, and their rat's nest of proprietary connector cables consumes lots of space.

Avocent has a better idea, with the first digital KVM switch, called the DS1800. Avocent's switch has no monitor output. Instead, you connect it to your Ethernet network and operate your computers remotely via a piece of software over a TCP/IP network.

It sounds like a great idea. In practice, however, we found the implementation lacking. Considering the high price tag of the product (\$10,000), the fact that you still need almost the same number of proprietary cables to connect your computers and poor software execution, the DS1800 isn't yet ready for enterprise users. We recommend waiting until the vendor at least improves its control software before trying the DS1800.

Apart from the freedom of location, there isn't much of an advantage over an ordinary analog KVM switch. The cost of

an analog switch is much less — you can buy a great analog KVM for \$1,000 and a perfectly adequate one for several hundred dollars.

The advantage of a digital switch is freedom from being near the computer you want to operate, as you could control a machine over the Internet from any location around the world. And by eliminating the monitor connection, you can manage your computers in logical groups around your company, rather than having to gather your staff together in a single "mission control" room.

## Digital advantages

Both digital and analog KVM switches allow you to view the entire boot process of your servers. This is because there isn't any software installed on the server, unlike remote control products such as Symantec's pcAnywhere. One advantage the DS1800 has over analog KVM switches is it can control anything running on an Intel machine — including Linux or Solaris, for example.

One of the niftier features of the DS1800 is that it gives you a choice of several different sets of cables to connect to your servers. There is one set for ordinary PS/2 keyboards and mice, another for USB connections, and two sets of cables for Sun workstations,

## While a digital KVM switch sounds like a great idea, in practice we found the implementation lacking.

which we didn't test. There is no support for Macintosh servers. You choose the configuration when you order a unit, and the cables are included in the price tag.

Like pcAnywhere, software needs to be loaded on the machine you'd like to monitor your servers from: three different programs, in fact. Two of them handle the access control for the switch. You can set things up so that only certain Windows NT or 2000 domain users have the ability to control particular computers. The third piece of software is remote control software that communicates with the switch over your IP network, and this needs to be installed on every machine you want to monitor your servers from.

## Some problems

The first two programs (access control) only need to be loaded on one machine on your network. But the catch is that these programs must be loaded on a machine that is part of your immediate LAN and inside your firewall. The reason for this is these programs need to communicate with your domain server to provide the authentication services. This has one big limitation: You can't control machines across the Internet unless you provide some sort of VPN or tunnel between the location of your switch and the monitoring machine. This is because most corporate firewalls block access to remote users logging on to their domain controllers over the Internet, as it should be for security reasons.

## Quirky mouse control

We had trouble with the DS1800 both at our labs and when we brought it into our ISP's server room. It was simple to switch sessions among the controlled computers: You

had only USB ports.

Avocent says it is working on better mouse support. Until it does, we recommend steering clear of the product. You can purchase multiple copies of pcAnywhere or buy an analog KVM switch for a tenth of the price.

*Strom was the founding editor in chief of Network Computing magazine and publisher of his own essays called Web Informant. He can be reached at [david@strom.com](mailto:david@strom.com).*

[www.nwfusion.com](http://www.nwfusion.com)

## SAVE SERVER ROOM SPACE

Senior Editor Deni Connor describes the benefits of KVM switches for cleaning up the clutter.

 **2529** online

## How we did it

We connected Avocent's DS1800 to two test Ethernet networks: one 10M bit/sec network at our lab and one 100M bit/sec network in the server room at Sohonet.com, a New York ISP. We connected it to servers ranging from 50-MHz 486s to a 1-GHz dual Pentium IIIs running Windows 98, NT and 2000, using standard PS/2 keyboards and mice, as well as USB keyboards and mice. We used the connecting cables that come with the unit. We then loaded the various Avocent software modules on an NT domain server and several Windows workstations and attempted to control our servers over the network. We did not test remote connections via the Internet, as we were unable to establish any VPN sessions.



### NetResults

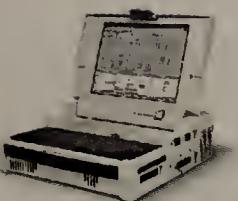
### DS1800

**RATING:** 2.55 **COMPANY:** Avocent, (800) 932-9239, [www.avocent.com](http://www.avocent.com).  
**COST:** \$10,000 **PROS:** Ability to monitor your servers from any IP-attached computer; ability to monitor any Intel-based server regardless of operating system. **CONS:** Requires careful mouse calibration on each connected server; VPN needed to work across the Internet.

Performance	Ease of use	Manageability	Documentation	Total score
30%	30%	25%	15%	
DS1800	2.0	2.5	3.0	3.0

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score. Scoring key: 5: Exceptional showing in this category. Defines the standard of excellence; 4: Very good showing. Although there may be room for improvement, this product was much better than average; 3: Average showing in this category. Product was neither especially good nor exceptionally bad; 2: Below average. Lacked some features or lower performance than other products, or than was expected; 1: Considerably sub-par, or lacking features being reviewed.

dreams made real.

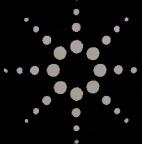


## We've organized a search party.

Since we invented the protocol analyzer, we've found more ways to search for problems on networks. These days, our Agilent Advisor family's out looking for trouble everyday, with high-performance dispatched solutions, remote and distributed testing, and low cost problem-solving software. Pick the best fit for your network and add capabilities as you grow. We'll help you solve critical LAN, WAN, ATM and VoIP network problems and avoid costly downtime. See how in our informative white paper, *Overcoming the Challenges of Integrated Networks*, free at [www.agilent.com/comms/onenetworks9](http://www.agilent.com/comms/onenetworks9). Download the free trial software there, choose your best solution—and your search is over.



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Wired Windows . Dave Kearns

## NETWORKING MVP: AND THE WINNER IS....

It's time to hand out the Wired Windows' Networking MVP award for the year 2000. Each year, (this is the fourth annual) I honor the people I con-

sider the most valuable player in furthering their company's network or directory strategy. Previous winners were Novell's Eric Schmidt (1997),

Directory Enabled Networks co-chairs John Strassner and Steven Judd (1998) and Bowstreet's Frank Moss and Jack Serfass (1999) for their work on Direc-

tory Services Markup Language.

One of the hot directory topics last year was deciding when to use a directory — and when some other data store was a better choice — to hold objects and attributes. I am having a long discussion of this with readers in the Network World on Directory Services newsletter.

The 2000 winner of the Networking MVP award showed us how to put traditional database information into the directory (making it easier to browse and search) through the use of pointers. Radiant Logic's Michel Prompt is no stranger to the client/server world of relational databases (relational DBMS). But he recognized the potential that directory services offered for the burgeoning world of e-commerce and decided to do what he could to bring the two worlds together.

While you could directory-enable and relational DBMS-enable your business-to-business or business-to-consumer Web site, why use two technologies when one would do? That was the premise Prompt started with, and the RadiantOne Virtual Directory Server was the product he ended up with. By combining Lightweight Directory Access Protocol, XML and SQL behind the scenes, Prompt enabled the typical browser to see personalized (via the directory) database information at will while maintaining powerful security through the authentication and authorization mechanisms built in to any good directory system.

By using pointers in a virtual server, Prompt has eliminated the need to resynchronize the database values whenever they change. Because the values are not moved to the directory — only a pointer, perhaps a SQL statement, for example — but only retrieved when the user wishes to read them, network traffic is held to an absolute minimum while data is always accurate and up to date. If you haven't already, spend some time at [www.radiantlogic.com](http://www.radiantlogic.com) and visualize what the virtual directory server could do for you.

Congratulations to Michel Prompt, the Networking MVP for 2000!

*Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at [wired@vquill.com](mailto:wired@vquill.com).*



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**Tip of The Week**

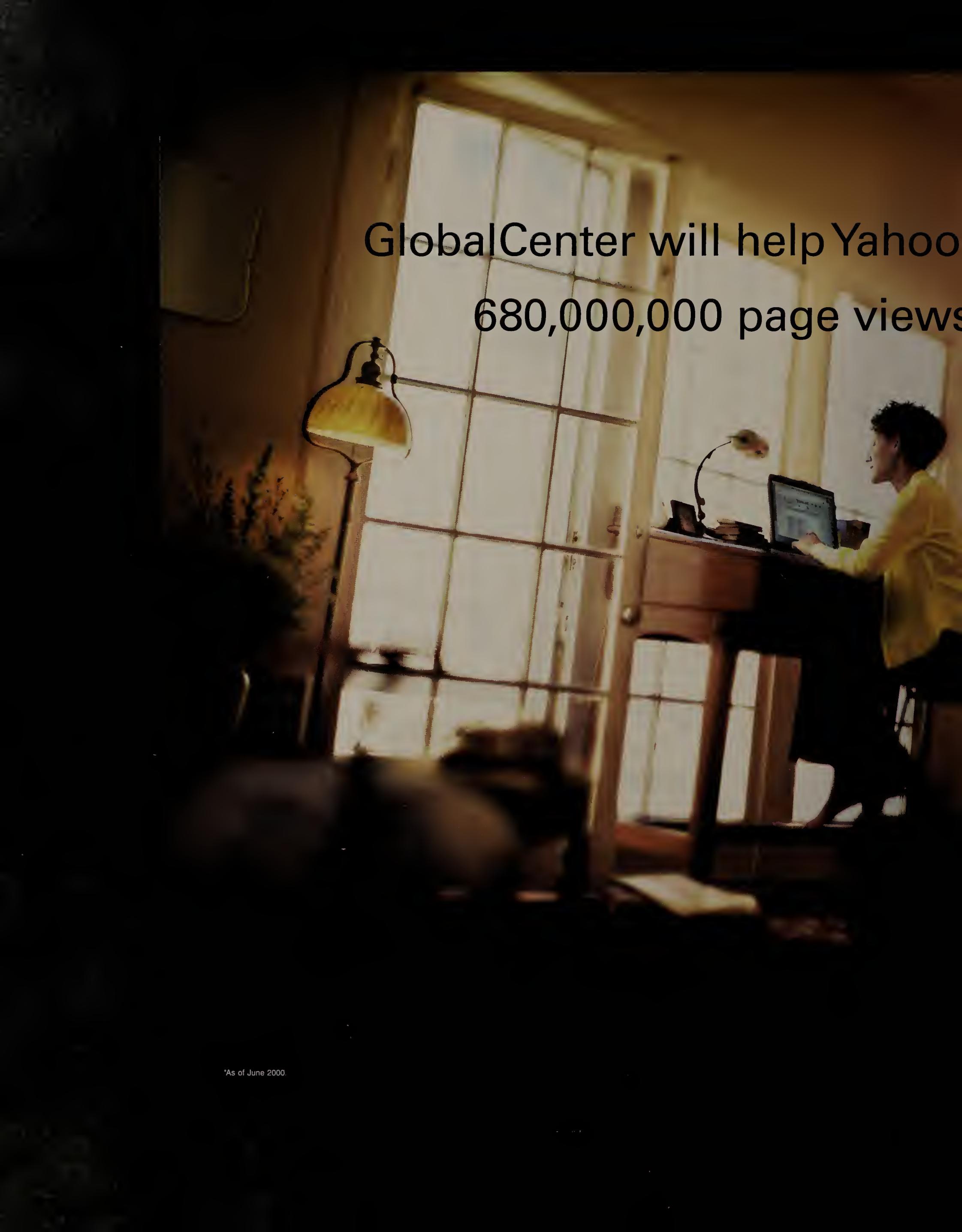
I had more to say about RadiantOne in the latest "Best" issue of *Network World*. Check it out at [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2524, then go on to the RadiantOne site.





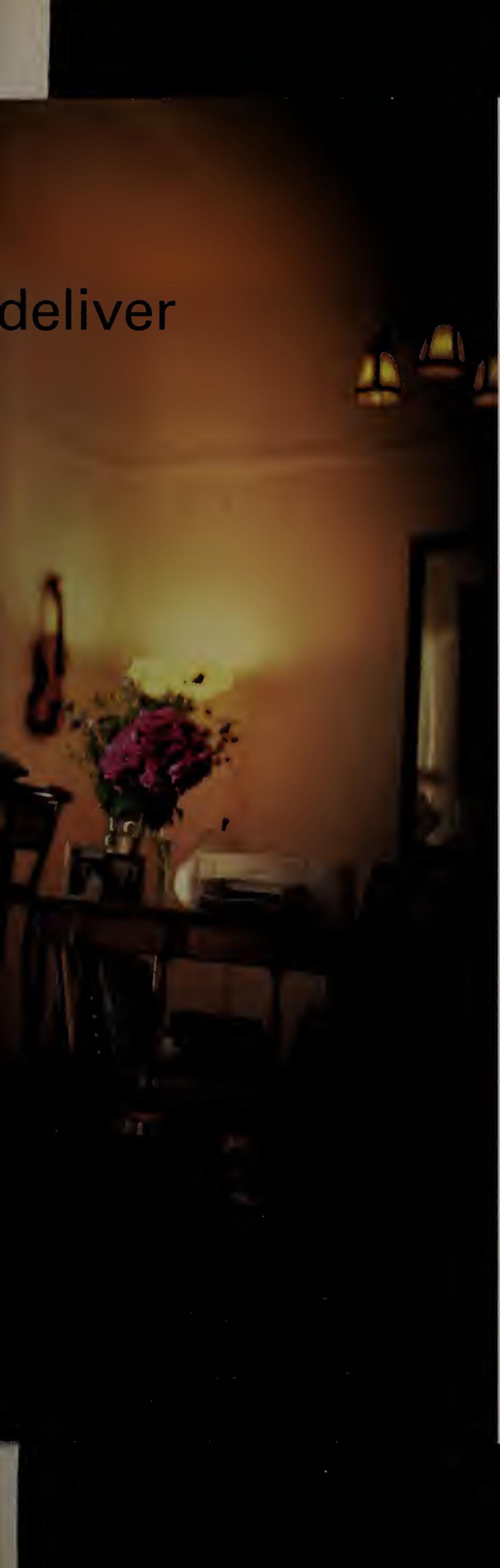
How hard  
will your  
network  
work today?

A large, bold, white text block is centered over a black and white photograph of a city skyline at night. The text reads 'How hard' on the first line, 'will your' on the second line, 'network' on the third line, and 'work today?' on the fourth line. The background image shows a dense cluster of skyscrapers, with one building on the left featuring a prominent vertical grid pattern on its facade.



GlobalCenter will help Yahoo  
680,000,000 page views

\*As of June 2000.



deliver



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How do you make it happen? You could use a service provider to expand your business. But who do you trust with your mission-critical applications?

Yahoo! was a search engine in search of bigger things. They wanted to become the best place to find anything, connect with anyone or buy anything online.

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And since GlobalCenter is Cisco-powered, Yahoo! got something else that's important: peace of mind. They knew GlobalCenter's services would be reliable, available, secure and compatible with their own network. With a Cisco Powered Network, it's all in a day's work.

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ratings on a dime.



# Poor's securities



Standard & Poor's saw an opportunity. A chance to create a worldwide Web-based credit ratings and research subscription service for several trillion dollars worth of S&P-rated securities. But time was critical. Things had to move fast. So they turned to Digex, a leader in managed Web and application hosting whose services are powered by Cisco. Due to their expertise and the scalability of their Cisco Powered Network, Digex had RatingsDirect.com up and running quicker than you could say "floating-rate asset-backed certificate."

Result? RatingsDirect.com became the first subscription-based service to deliver objective, insightful global risk analysis 24x7x365. It was an instant hit.

But there was another benefit for S&P. Bringing in Digex removed a huge task from their IT department's plate. Leaving them free to create more e-products to help spur further growth in the global financial arena.

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Setting the Standard

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Digex. Always a Leader in Technology.

Digital Island will help National  
connect engineers to 500,000 des



# Semiconductor design parameters.



National Semiconductor was looking for something. A level of customer service beyond anything their competitors ever offered. When they landed on Digital Island, they got it. In spades.

Digital Island has a Cisco Powered Network. They offer integrated hosting, content delivery, network services and application services. National Semiconductor used Digital Island's infrastructure to host their extranet. Here, circuit design engineers from all over the world can come to run test scenarios and circuit simulations. Not to mention order samples and purchase products.

Bottom line: increased sales. Weeks shaved off the typical design cycle. Time to market for National Semiconductor customers dramatically shortened.

Now what about you? Will your network work this hard today? If not, you should talk to the same kind of service provider these companies use — one with a Cisco Powered Network. To find out more, just turn the page.





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# Net.Worker

**Products, services and strategies for tying teleworkers to the enterprise**

## Briefs

At the Consumer Electronics Show (CES) in Las Vegas last week, 3Com announced its Bluetooth PC Card (\$109), USB Adapter (\$109) and Wireless Access Point 1000 (pricing not set), which allow for wireless communication between Bluetooth-enabled devices such as cell phones and PDAs within a 10-meter range. The PC Card will ship in March, and the USB Adapter and Access Point in late summer. The PC Card antenna and USB adapter are adjustable to optimize reception. "The human body is mostly water; sometimes it interferes with Bluetooth transmissions," explains 3Com's Troy Holtby.

3Com: [www.3com.com](http://www.3com.com)

Soon the phone won't be the only device you speak into. At CES, Plantronics demonstrated a Bluetooth headset that lets mobile users communicate wirelessly with notebook PCs, PDAs and cell phones. It is set to ship in March. Pricing has not been determined.

Plantronics: [www.plantronics.com](http://www.plantronics.com)

If all you miss about the main office is the copy machine, at CES, Canon USA introduced the PC 425 (\$199), a personal copier designed for small businesses and home offices due next month.

Canon: [www.canon.com](http://www.canon.com)

The results of an upcoming survey by Greenfield Online for Polycom found that 21% of 1,000 people surveyed passed up jobs that involved frequent travel. In addition, 64% of respondents said high-quality, interactive video communications would be a viable alternative to face-to-face meetings. Moreover, 44% said telecommuting enables them to work hours of their choice, and 39% said it saves commuting time.

Polycom: [www.polycom.com](http://www.polycom.com)

## Residential gateways blend work, fun

*Security and ease of use top remote manager's list of concerns.*

BY SAM COSTELLO

When you send workers home to work, you probably supply a notebook PC, a DSL connection and a phone line or PBX extension. But once they've settled in, do you give much thought to the home network gear they might also buy?

Now that broadband is taking hold, residential gateways are poised to turn the heads of home office workers and general consumers as an easy way to share the connection among multiple household PCs. They also promise to serve as a platform for a variety of cutting-edge applications, such as phone networking, video distribution and home automation.

A market forecast by the Cahners In-Stat Group predicts the residential gateway will grow to \$5 billion by 2005. A slew of companies are banking on gateways, including 2Wire and Cayman Systems, and at last week's Consumer Electronics Show in Las Vegas, heavy hitters 3Com and Panasonic introduced products.

The residential gateway is a "digital front door to the wide-area network," says Peter Vicars, CEO of Cayman. There are stark differences among products coming to market, but at the core they all do the same thing. Gateways connect to your DSL or

### Gateways at a glance

**Not all gateways are created equal. Here's what the major players are offering:**

Company/Product	Home PNA (10M bit/sec)	Wireless (802.11b;11M bit/sec)	Added features	Price
<b>2Wire</b> ( <a href="http://www.2wire.com">www.2wire.com</a> )				
HomePortal 100W	Yes	Yes	USB	\$399
HomePortal 1500W	Yes	Yes	USB	\$599
<b>3Com</b> ( <a href="http://www.3com.com">www.3com.com</a> )				
Home Ethernet Gateway	No	No	Print server, ISDN	\$159
Home Wireless Gateway	No	Yes	ISDN	\$399
<b>Cayman Systems</b> ( <a href="http://www.cayman.com">www.cayman.com</a> )				
2E500H	No	No	Web server	\$599
2E500HW	No	Yes	Web server	N/A
<b>MaxGate</b> ( <a href="http://www.maxgate.net">www.maxgate.net</a> )				
UGate-3300	No	Yes	Print server, Web server	\$330
UGate-3200	No	No	Print server, Web server	\$230
<b>Panasonic</b> ( <a href="http://www.panasonic.com">www.panasonic.com</a> )				
Concourse Broadband	Yes		Yes	Whitecap — enhanced
Networking Gateway				802.11 technology

cable modem or replace it, then make that bandwidth available to your networked PCs and peripherals via home network technology — whether traditional wired Ethernet, home phone line networking, wireless (802.11b or HomeRF) or some

combination. To bring PCs and peripherals onto the network requires an adapter of some sort, whether it is a Universal Serial Bus device, PC card or PCI card.

New products offer a range of features, such as built-in print servers and phone networking, but security features are paramount for remote workers. Most gateways include some sort of firewall technology and network address translation, which hides the home network behind a single IP address. Most include VPN passthrough, which means the gateway should work with VPN-enabled PCs, critical for home workers accessing corporate systems. But not all gateways that support VPN passthrough allow for IP Security (IPSec), Point-to-Point Tunneling Protocol and Layer 2 Tunneling Protocol encryption.

Ease of use is crucial because most gateways will be set up and maintained by end users with limited technical knowledge. That's also important to network managers, who may find themselves supporting that remote network gear in addition to the teleworker's PC.

It is important to consider the types of home network technology a gateway offers. While all offer wired Ethernet, some, such as those from Cayman and 3Com, offer wireless gateways that work with 802.11b technology. Others, such as

See **Troubleshooting**, page 24

## Help remote users help themselves

BY DENI CONNOR

Harried IT managers may save time and money by training remote users to troubleshoot simple network problems themselves.

An informal study of network managers conducted by *Network World* showed that providing remote and mobile workers and teleworkers with knowledge of troubleshooting dial-up communications or other computer-related problems will save time and free IT to concentrate on more complex issues. Network managers recommend training users on a range of tasks from running Microsoft Scandisk on a hard disk drive to troubleshooting dial-up and broadband connections.

"At Novell, we have a help desk that is staffed seven days a week, 24 hours a day,"

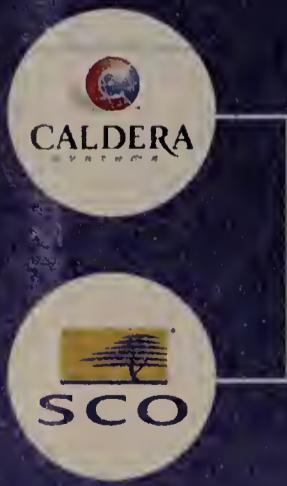
says Ken Anderson, CIO of the network giant. "We tracked the types of calls we were receiving and isolated the 10 most common calls." From there, Anderson put in place a series of tips for solving the most common problems.

A couple of years ago, Anderson says, the most common calls IT received were questions on how to obtain an IP address. "Today, my No. 1 call is how to change passwords," Anderson says. Novell maintains a library of training materials on the Internet that helps users learn how to perform tasks such as removing or adding software or connecting to Novell when they travel.

Few IT managers, though, have the luxury of providing online materials to remote workers, and even fewer staff their

See **Gateways**, page 24

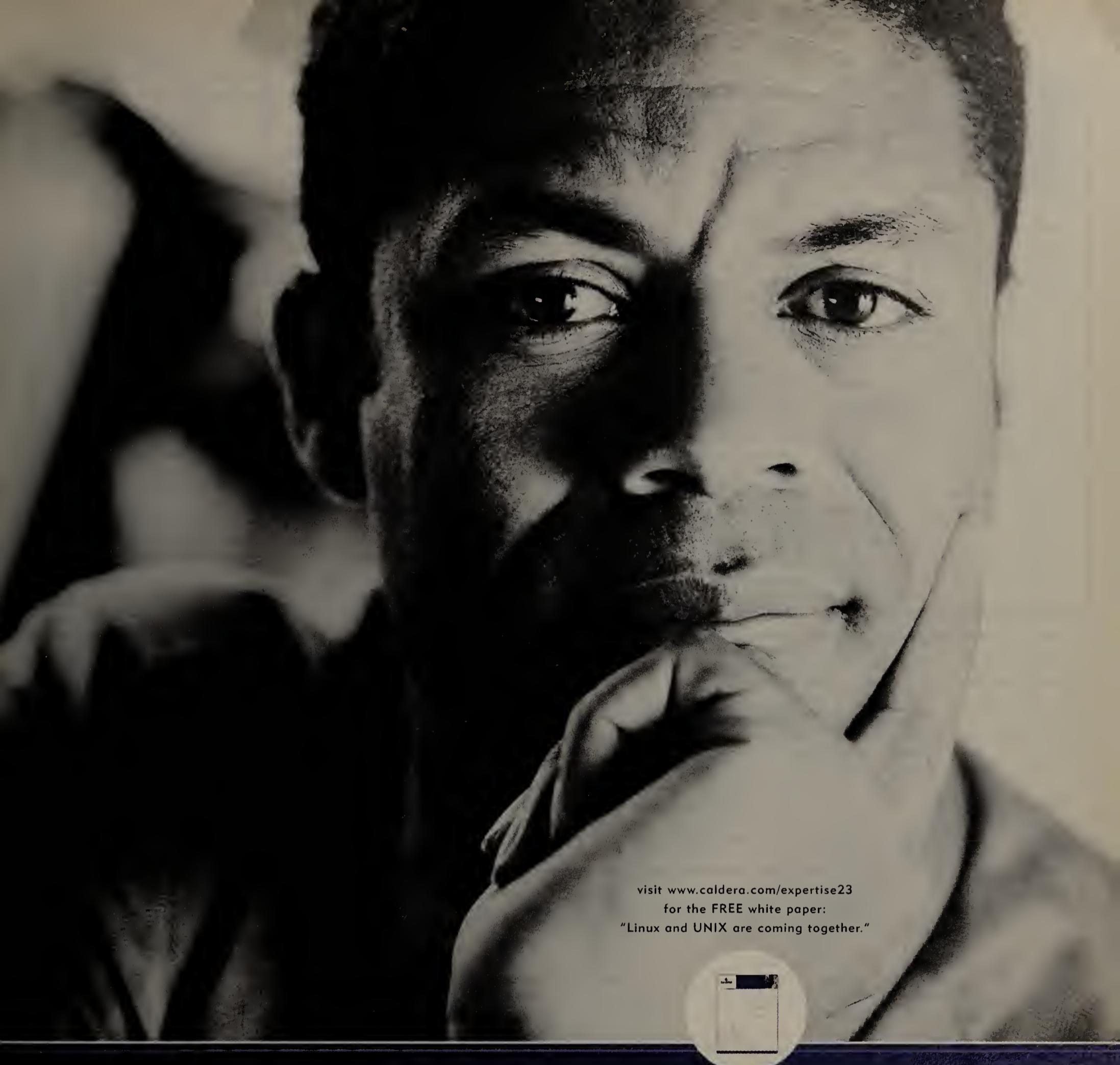
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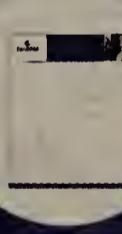
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Teleworker Beat . Toni Kistner

## WHITECAP WEARS A BLACK HAT

**J**ust when it's looking like the Wireless Ethernet Compatibility Alliance 802.11b wireless network folks have wrestled the home market away from HomeRF, a new standards skirmish is brewing in the WECA camp.

After a slow start, the 802.11b specification has won widespread support, and a slew of vendors have lined up with 802.11b networking gear. Meanwhile, Sharewave, a home network silicon maker, has tweaked 802.11b to optimize it for multimedia, namely MPEG2 audio and video. You'll find the enhanced version, called Whitecap, in Netgear's just-announced Wireless 11x products, and Panasonic's Concourse Broadband Networking Gateway.

Sharewave gave me a demo of Whitecap last week at the Consumer Electronics Show (CES). Wow, was it ever better. They'd set up two identical wireless home networks, each with a

PC, a notebook and a video connection to a video display. One used Cisco's Aironet network, the other Sharewave's technology. The idea was to illustrate that "vanilla" 802.11b is "collision based," meaning data packets bump along and crash into each other, get lost and re-emerge, but most eventually make it to their destination. That's fine for transferring a file or print job, but lousy for multimedia.

On the Aironet network Sharewave transferred an MPEG2 video file from a notebook PC across the net to video display. The video tripped along in a way that'd make you boo and throw popcorn at the screen. When they transferred a 1M-byte file, the trailer stopped dead for a few seconds before jolting back into action. Clearly, vanilla 802.11b isn't ready to deliver entertainment applications. Yet, it's the wireless technology you'll find in nearly all the first wave of residential gateways.

On the Sharewave net, the trailer played smoothly. Whitecap is just what you want in the home, but if you've already got 802.11b in the office, you're in for some teeth gnashing. The first version of Whitecap is not compatible with existing 802.11b products. So if you buy Netgear gear or the Panasonic gateway with an eye to plugging in your corporate Lucent or Aironet 802.11b card, it won't work.

If you're willing to wait, Sharewave promises the next version of Whitecap, expected this summer, will be compatible. Over time, Sharewave contends the specification will come together under 802.11e — a version that runs on a 5-GHz band and provides quality of support — expected by 2001. But for now, Sharewave sees the big players, including Lucent and Cisco, as competitors, and is busy stealing

the smaller ones away in Whitecap licensing agreements.

Find more **Teleworker Beat** columns online at [www.nwfusion.com](http://www.nwfusion.com). Here's a taste of some recent topics:

What happens when teleworkers turn a bustling office into a ghost town? DocFinder: 2537.

Fran Carnevale launched her telework job site Portajobs assuming Washington, D.C.-area tech companies would be clamoring to be considered "Progressive Employers." Find out what happened. DocFinder: 2525.

Has your road warrior CEO got you scrambling to find technology that provides anywhere connectivity and seamless home working? I've got two products for you. DocFinder: 2526.

*Kistner is the managing editor of the Net. Worker section. She can be reached at [tkistner@nwfusion.com](mailto:tkistner@nwfusion.com).*

### Gateways, continued from page 21

Panasonic's Concourse Broadband Networking Gateway and 2Wire's HomePortal products, offer Ethernet, 802.11b wireless and home phone line support, which means you can use a mix of technologies on your net.

While the predicted growth of the market is compelling, Mike Wolf, Cahner's director of enterprise residential communications and author of a forecast entitled "Residential Gateways: Unleashing the Broadband Services Tsunami," expects much of the growth to be spurred not by swelling ranks of remote and mobile workers, but by consumer demand for voice over IP, video and audio entertainment, and home monitoring applications.

Even so, with a residential gateway, soon you'll be able to extend your firm's converged voice and data net to the home, and benefit from the same telephony features, such as call forwarding and routing. 2Wire is ahead of the pack by announcing a gateway with telephony capability, expected by March.

You'll also be able to build a home phone network with multiple phone lines and extensions, all running over IP. You'll be able to order three pay-per-view movies and show them simultaneously on three televisions in your home. Home mon-

itoring will let energy companies remotely check your heating oil level.

Wolf says much of the growth will occur closer to 2004. He expects most gateway products will be sold as part of broadband service packages.

"Once service providers realize what a gateway can offer them and their customers, they will likely adopt them," says John Marshall, 2Wire's director of product marketing. But vendors aren't waiting to ink deals with service providers and are selling products from their Web sites. 2Wire's Home Portal is available on the Dell site, and will soon be available in Office Depot stores.

*Costello is a correspondent with IDG News Service's Boston bureau.*

### Troubleshooting, continued from page 21

help desks 24-7 to support flexible work styles.

But many network managers supply materials that guide users through some rudimentary troubleshooting of dial-up connections, such as what to do when a blue screen occurs or tasks users need to perform daily, such as virus checking.

"All my remote users have Norton Utilities and antivirus software," says Michael McKenney, IS manager for Americorp in Birmingham, Mich. Moreover, McKenney provides a handout that guides users through using utilities such as ping of ipconfig, which they can use to test dial-up connections.

If users are having connection problems, McKenney says they call their ISP first to make sure the problem is not on that end. McKenney also gives users a handout that teaches them "some essentials of traceroute, scandisk and chkdsk."

In addition, he requires users to perform daily maintenance tasks. "They empty the contents of C:\Windows\Temp, and the recycle bin, and run Norton Disk Doctor, Speed Disk and Norton Antivirus. If they need new hardware, I walk them through the installation over the phone," McKenney says.

Most of the network managers *Network World* polled

### Help yourself

When remote Novell employees have a problem, they often can avoid a call to the help desk by visiting the company's intranet, where they find troubleshooting tips and useful information.

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- How do I schedule a video conference?
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said, at a minimum, users should be able to troubleshoot their dial-up connections. If the user couldn't solve the problem, then the managers said they helped. (For some helpful online troubleshooting sites, see [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2534).

"We provide faculty/staff and students with software and documentation for setting up their computers and laptops so that they can dial in to the university

network," says Jeremy Mlavovsky, network specialist at the University of Dayton in Ohio. "Many problems users see are due to a misconfigured network settings; the fixes are detailed in documentation we provide. The first thing users should do when a problem occurs is make sure the settings are correct."

"If the user is sure that everything seems to be in order, then they should contact us," Mlavovsky says. □

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# Carriers & ISPs

**The Internet, Extranets, Interexchange  
and Local Carriers, Wireless, Regulatory Affairs**

## Briefs

**GiantLoop Network**, a Waltham, Mass., provider of optical network services for large companies, recently formed an alliance with **360networks** that will make 360networks GiantLoop's preferred provider of long-haul network services in North America and Europe. The two companies will work together on network engineering, and customer and operational support. As part of the agreement, 360networks has made a minor equity investment in GiantLoop. GiantLoop, which launched late last year, builds and manages fiber optic campus, metropolitan and intercity networks that aggregate a variety of data and storage protocols for very large companies.

**France Telecom** is selling off up to 15% of its wireless service division **Orange SA**. France Telecom is expected to hold an IPO by the end of the month. The company is trying to bring in cash after its \$40 billion acquisition of telecommunications service provider **Orange PLC** last year.

**Vodafone Group** is continuing an aggressive acquisition spree with the \$973 million purchase of Mexican wireless service provider **Grupo Iusacell**. Vodafone, which owns 45% of **Verizon Wireless**, is making its first entrance into Latin America. The investment gives the U.K. company a 34.5% interest in Grupo Iusacell. The firm offers wireless service in four of Mexico's nine regions in the central portion of the country. The transaction is subject to approval from regulators and the company's majority shareholder **Verizon Communications**. The purchase provides another link between Vodafone and Verizon, which owns and operates Grupo Iusacell.

## AT&T trumpets coast-to-coast OC-192

*Service provider also announces plans to double Web-hosting capacity in 2001.*

BY JAMES EVANS AND DENISE PAPPALARDO

**A**T&T is putting its network on the fast track by delivering on a promised backbone upgrade and building more data centers.

The service provider announced last week that it completed what it claims is the first U.S. coast-to-coast OC-192 (10G bit/sec) IP backbone. AT&T also announced it will more than double its Web-hosting capacity this year with construction of seven more data centers.

While the majority of AT&T's Internet backbone runs at OC-48 speeds, the service provider had already bolstered its OC-192 support that linked Cambridge, Mass., and New York. The upgrade includes two 10G bit/sec network paths that connect Boston, Chicago, Los Angeles, New York, St. Louis and San Francisco.

AT&T was one of the first ISPs to roll out OC-192, but the company lost its edge by not moving as quickly as competitors **Cable & Wireless** and **UUNET**, which have multiple OC-192 links up and running

([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2535). But AT&T is inching ahead in the race with its coast-to-coast link.

AT&T is upgrading its network to OC-192 with Avici's Terabit Switch Routers.

The service provider's data center expansion is an ongoing effort. AT&T, British Telecom and the companies' international joint venture announced last year a \$2 billion pledge to build up to 44 data centers around the world by mid-2003.

In December AT&T opened data centers in Secaucus, N.J., and Orlando and a new facility in New York, bringing the number of centers to 13. AT&T is expected to open its next center somewhere in the U.S. within the next month. The firm would not disclose the location of the U.S. center or the future Asian center.

The company's data centers are located on three continents and include New York; San Diego; Redwood City, Calif.; Middletown, Va.; Phoenix and Chicago. Internationally, AT&T has centers in Birmingham, England, and Tokyo and Osaka in Japan.

The data centers can offer bandwidth

on demand, managed hosting centers, application management, network and bandwidth management, and hardware and operating system management. The Basking Ridge, N.J., firm also can provide database management, storage services, managed security and firewall services, and intelligent content and distribution.

*Evans is a correspondent with IDG News Services' Boston bureau.*

[www.nwfusion.com](http://www.nwfusion.com)

## STANDARD SPEED

Read about America's Fiber Network, a wholesale service provider which uses the OC-48 standard.



## Wireless provider touts price for 100M bit/sec

BY MICHAEL MARTIN

**BELLEVUE, WASH.** — Fixed wireless provider Advanced Radio Telecom is targeting budget-conscious businesses with big bandwidth needs by serving up burstable 100M bit/sec Internet access for \$1,000 per month.

The offering, introduced last week, is called the BroadStream Internet Service. ART is rolling out the service to multi-tenant buildings in nine metropolitan areas — Seattle; Portland; San Jose; Houston; Los Angeles; Orange County, Calif.; Phoenix; Dallas and Washington, D.C.

ART has provided wireless metropolitan broadband services in the 3.8-GHz band since early last year, says Brian Heagler, ART's executive director of investor relations. While the service hasn't changed, the price has, he says.

"If you'd come to us six months ago, we wouldn't have had anything this price-competitive," he says.

ART's networks are point-to-consecu-

tive-point rings. Each building on the ring has two radios, with each radio pointing to another radio on a nearby building. If one radio goes down, a building would still be able to maintain connectivity through the backup radio, Heagler says.

This redundancy allows ART to offer customers a service-level agreement (SLA) covering 100% availability. If ART does not meet the SLA, customers will receive credits on their bills.

The BroadStream offering is compara-

### Big bandwidth goes wireless

**Advanced Radio Telecom says its BroadStream Internet Service gives enterprise users:**

- Up to 100M bit/sec for \$1,000 per month.
- An SLA that provides for 100% availability.
- Simple transition from other technologies.

ble to Cogent Communications' metro broadband service, which also costs \$1,000 for 100M bit/sec. Cogent is a fiber-based metropolitan Ethernet company.

Heagler says one advantage ART has over metropolitan Ethernet companies is the time it takes to add new buildings to ART's networks.

"If we have line of sight to a customer building, we can get service up in about 10 days," he says.

Wireless providers such as ART have the potential to offer services that are competitive with the offerings of landline broadband firms pushing DSL, T-1s and metropolitan Ethernet, says Robert Rosenberg, president of InSight Research, a market research company. But any company deciding to hand its business to a wireless provider should make sure the provider has a well-engineered network, he notes.

"In the end it will come down to who can offer the best QoS at the best price," Rosenberg says.

ART: [www.ipsp.com](http://www.ipsp.com)

# Free-space lasers shining as obstacles are overcome

BY TIM GREENE

**B**eam data from point to point in free space using lasers is no longer the show-stopping trick it used to be, now that metropolitan service-provider networks based on this technology are becoming reality.

Dallas-based Tellaire is delivering 10M bit/sec transparent LAN services in Houston and Austin, Texas, Washington, D.C., and New York. Its pricing varies city to city, but the company says it aims to give twice the bandwidth for the same price as a conventional landline service.

And Terabeam Internet, the cooperative venture of Lucent and Terabeam, will offer data services to customers in Seattle and five other undisclosed cities beginning later this winter. Terabeam doesn't have pricing set for its LAN-interconnect services, but says it will be cheaper compared to the prices customers pay now for landline services. The slowest offering will be 5M bit/sec, a company spokesman says.

Bringing such services to market has required overcoming some of the inherent problems with the technology. One obstacle, fog, is being challenged head-on by Terabeam, which chose Seattle — one of the country's foggiest cities — to premiere its services. Free-space lasers must be arrayed so nothing blocks the path of the laser beam as it passes from transmitter to receiver. A heavy fog comprised of tiny water droplets that diffuse the light can weaken signals to the point that a connection is lost.

But makers of these laser systems can overcome this problem to some degree by boosting the power of the laser so it cuts through the fog. In addition, service providers can engineer their networks so the individual links between sites are short enough so even the most dense fog will not block the beam. AirFiber, which makes the OptiMesh Rooftop System of free-space laser devices used by Tellaire, says its gear reliably transmits at 622M bit/sec at 200 meters. Terabeam says it can deliver 1G bit/sec throughput.

But other factors could block a laser's path, from a hovering helicopter to a billboard placed on an intervening rooftop. Equipment failure can also bring down a link, so designers of free-space laser networks have had to find a way to build in redundancy.

That is being done by building meshed networks that use recovery schemes inherent in standard routing and switching. AirFiber, for example, uses ATM switching behind its laser equipment. That lets AirFiber networks switch around failed links so sites with redundant links don't lose service.

## FREE-SPACE LASERS

**Fiberless optical technology supports meshed networks, not just point-to-point links.**

wider area at the target site. At a distance of one kilometer, a laser can spread to two meters in width, Obst says. In its Seattle deployment, Terabeam is adjusting the lasers to fill the 16-inch wide receivers regardless of the length of the link.

The widening of the beam lets the buildings flex and sway without drawing the beam off the receiver. Terabeam has also built in proprietary tracking devices that repoint its lasers to correct for these changes.

### Link length is crucial

Link length is key to reliability. Tellaire has links up to one kilometer that should afford 99.1% reliability based on a study of 50 years of National Weather Service data for 64 U.S. cities, Obst says. That is below the 99.999% availability service providers can offer. In some cases, Tellaire customers opt for a radio-frequency backup that reduces throughput dramatically, but maintains a link, he says.

AirFiber recommends using shorter links. "You can't go a kilometer and do it reliably at the same time," says Janet McVeigh, vice president of marketing for AirFiber.

Laser power is federally regulated for safety, and the lasers used in these systems are safe for property, people and flights of pigeons, vendors say. A spokesman for Terabeam says that unlike the laser pointers you can pick up at the office-supply store its customer-site gear requires no safety warning.

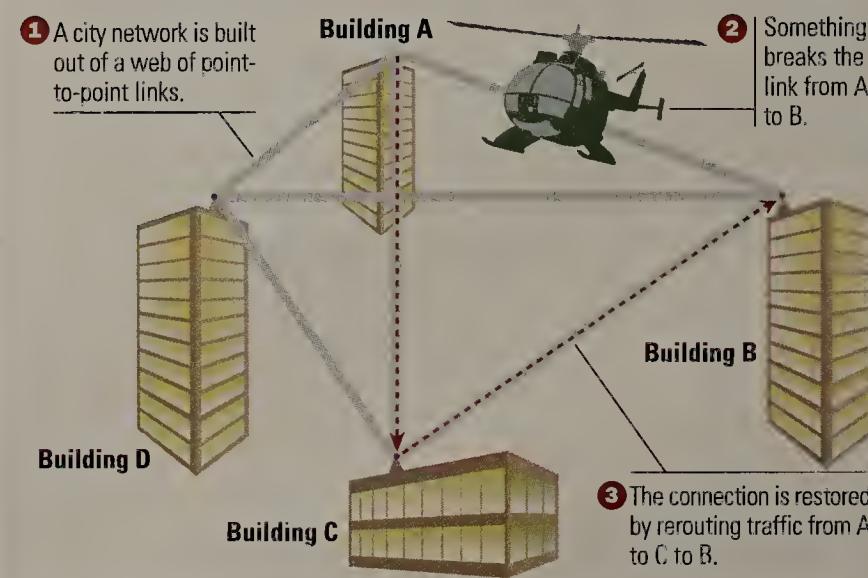
This technology is particularly well suited to upstart carriers, says Christopher Nicoll, vice president of consultancy Current Analysis. First, the equipment is relatively inexpensive. AirFiber says that in a metropolitan network laser links can be set up for \$30,000 per building.

It is also easy to deploy, which means fast setup times, Nicoll says. AirFiber says its gear can be set up in half a day. And service providers need no rights of way into buildings; the beam travels in free space. All service providers need is a spot on the roof to place their equipment. Terabeam says in many cases it doesn't even need that because most of its hubs are located in offices, and the lasers are beamed out the window to a receiver behind a customer's window. Obst says Tellaire shoots a service through a window to a customer in the Empire State Building.

Service providers using this technology are unlikely to overtake traditional fiber metropolitan network providers, but they will fill a niche, Nicoll says. For customers who need high-bandwidth access turned on quickly to sites that have not been linked yet to fiber networks, fiberless optics may be the way to go. □

### Shoring up laser reliability

**Building meshed metropolitan networks of lasers that beam data between buildings helps ensure the network reliability customers demand.**



The laser equipment is distributed in a network that looks much the same as a traditional dedicated circuit network. Each site ideally is connected by more than one beam, each coming from a different direction.

Optical Access and Terabeam base their networks on IP and use standard router protocols to route around failures. Terabeam uses an off-the-shelf router made by another vendor (it would not say which one), and Optical Access bought router technology from Nbase Xplex.

In its Austin deployment, for example, Tellaire has six buildings networked. One of them has a single laser connection, and two others each have two or three. So if there is a failure, the network reroutes based on well-known spanning-tree algorithms, says Andy Obst, Tellaire's chief operating officer.

### Other factors to consider

To make sure the lasers stay aligned with the receivers, service providers also have to consider the sway of buildings and the fact that buildings actually change shape slightly with heat and cold. That is dealt with in two ways. First, the apertures on the lasers are set so the beams spread to hit a

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Reported by *Computer Reseller News*, May 24, 1999

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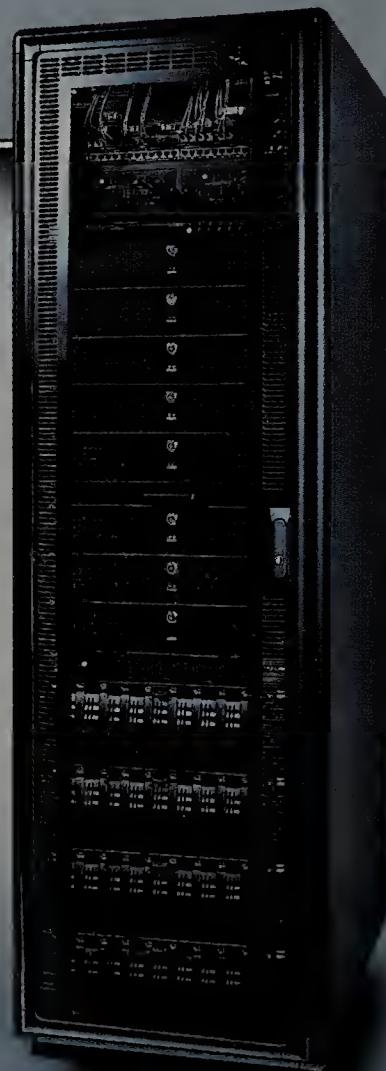


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# The Edge

**Service provider developments at the juncture between the enterprise and the new public network**

## Briefs

Metropolitan Ethernet carrier **Yipes Communications** has announced a program under which other service providers can resell its 1M to 1G bit/sec **flexible-bandwidth IP services**. The resale program is targeted at ISPs, application service providers, in-building telecom providers and independent collocation facilities vendors. Yipes says it will also consider co-selling, agency and lead referral relationships with other carriers.

Nortel Networks is enhancing the Nortel Networks Universal Edge Intelligent Multi-service Access Switch DSL Access Multiplexer product portfolio to support the International Telecommunication Union **G.shDSL standard**, which is designed to offer improved DSL speed, reach and performance with reduced line interference. Also in standards news, **Cisco** says its Cisco AS5x00 remote access products will support V.92 and V.44, the latest industry standards for modem technology, beginning later this quarter. These standards enable Internet users to experience the qualities usually associated with broadband for the price of dial-up or modem access, Cisco says.

Following Lucent's admission that it's having problems with some competitive local exchange carriers (CLEC) paying their bills, DSL equipment provider **Copper Mountain** says it's reducing its expected fourth-quarter revenue for the same reason. Copper Mountain says it has decided not to recognize as revenue \$8 million worth of equipment to a single unnamed CLEC "due to the uncertainty of its ability to pay for the equipment." Copper Mountain reiterated past statements that it is focusing harder on in-building telecom providers and large incumbent carriers.

BY APRIL JACOBS

**A**dero announced that it plans to extend its content delivery services to offer them to Web-hosting companies, carriers and ISPs that want to resell them to their customers.

Adero's move could mean a simpler way for end users to access content and media-streaming services through providers they already employ to manage their Web sites and Internet access.

At the same time, Adero announced that it's selling its Content Bridge billing technology to Inktomi. Adero says its moves are part of a strategic business plan that acknowledges the need for content delivery providers to band together with network service providers.

Infrastructure costs are too high for content delivery providers to go it alone as user demands increase, says Al Fink, Adero's vice president and general manager for content delivery services.

Under Adero's resale program, network service providers will be able to private-label the services they outsource from Adero. For example, Adero plans to offer its OmniCast technology to providers, which it says guarantees that the freshest

content is simultaneously delivered to all distributed nodes within a global content delivery network.

Adero says one of its first customers is Swiss network service provider Sunrise Communications AG. Sunrise will use Adero's services to provide better performance and extend its current content delivery services to global customers.

Adero's sale of its Content Bridge billing technology to Inktomi for \$23.5 million is a move to avoid any potential conflicts of interest with its partners and customers, Fink says. That billing technology lets content delivery providers bill for the services they render, such as media streaming.

Content Bridge, an alliance formed to allow cross-network content distribution, went live early last month with content peering services.

For corporate users and retail service providers, content peering provides better access and a better method of content distribution, and helps their own customers — individual Internet users — get fresh information available on the Web. Inktomi says its beta program will let content provider customers such as Color Kinetics, MIT Sloan eBusiness Awards and Peer Music/Digitalpressure.com work with

Content Bridge member networks to verify that the core functions required for content peering are operationally ready.

One key aspect of the Content Bridge technology is its ability to ensure that user log information is promptly returned to the content provider and hosting provider, which verifies usage of data and transaction information so it can be properly billed among member networks. □

[www.nwfusion.com](http://www.nwfusion.com)

# BRIDGING THE GAP

Content Bridge is an alliance of leading technology and service providers that have come together to improve Internet performance. Find out how it works online.



## Avici Systems to ship OC-192c interface cards

*Follows Juniper, may beat Cisco to market with clear channel 10G.*

BY JIM DUFFY

**BOXBOROUGH, MASS.** — Avici Systems last week announced it will ship OC-192c interfaces for its Internet core router next month.

With the availability of its 10G bit/sec OC-192c/STM-64 line cards, Avici becomes the second Internet core router vendor to ship concatenated — or "clear channel" — OC-192 interfaces on its platform. Juniper Networks has been shipping for almost a year, while Cisco is expected to ship this quarter.

The single-port OC-192c line cards occupy two slots in a 40-slot Avici Terabit Switch Router (TSR) bay. A single bay, comprising four 10-slot shelves, can house up to 20 OC-192c interfaces, Avici says.

Juniper's M160 router can support up to eight OC-192c ports, while analysts believe Cisco's 12016 GSR will sport up to 16 OC-192c interfaces. Juniper also has

some packet ordering issues with the M160 and OC-192c ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2536).

Despite the density, some analysts do not believe Avici's OC-192c capabilities will translate into significant market share gains against Cisco and Juniper.

"Most of [those vendors] already have customers committed to them in terms of OC-192 deployment. But it's definitely an important step for Avici," says Muayyad Al-Chalabi, director of core switching and routing research at RHK in San Francisco.

According to the Dell'Oro Group, Avici had less than 1% of the \$680.6 million market for Internet core routers in the third

quarter of 2000. Cisco had 69% and Juniper had 30%.

Cisco and Juniper, however, had to roll out new chassis to house their OC-192c interfaces. Avici's customers will not have to undergo a similar "forklift" upgrade, says Steve Duffy, Avici product marketing manager.

Avici is shipping a channelized OC-192 line card that supports four multiplexed 2.5G bit/sec channels on a single 10G bit/sec OC-192 link. The OC-192c supports a single 10G bit/sec payload while the channelized module lets service providers support four 2.5G bit/sec payloads over the same 10G bit/sec link.

Avici also announced last week a dual-See Avici, page 32



Avici's TSR now has OC-192c interfaces.

# Riverstone unveils its core MAN switch

Hardware-based MPLS on the switch could lead to secure metropolitan-area virtual LAN and VPN services.

BY PHIL HOCHMUTH

SANTA CLARA — Riverstone Networks this week will debut a flagship switch for the core of metropolitan-area networks that integrates features needed for business-class IP services.

The key to the Riverstone RS 38000 for carrier-based MANs is the use of Multi-protocol Label Switching (MPLS) to create virtual Ethernet domains across multiple customer locations. The switch also enables virtual leased lines and packet-over-SONET transport, according to the company.

The device includes a high concentration of Gigabit Ethernet ports, as well as optical uplinks and traditional WAN interfaces, including T-1 and ATM. It has 30% more backplane capacity than the RS 32000, Riverstone's current

top-line MAN switch.

In addition to hardware-based MPLS for providing quality of service (QoS) throughout the MAN, Riverstone is also crowing about Resilient Packet Ring (RPR) technology, which optimizes Ethernet to run over a SONET infrastructure.

MPLS, which is used mostly to differentiate traffic flows in the Internet core, could let service providers extend the technology to the front door of customer networks. The technology could be used to group buildings that are miles apart into distinct VPN domains. It could also let carriers split up bandwidth on a granular, per-customer basis, providing inexpensive leased-line replacements for businesses with expanded bandwidth options.

ASICs in the switch perform the label switching, as opposed

to software and network processors, which provide for faster throughput of differentiated services, the company claims.

Some analysts look favorably on the new technology, saying it could prove to be a major differentiator for Riverstone in the MAN market.

"I think the feature that sets [Riverstone] apart is their proposal to use MPLS in the metro network to provide secure business-grade services," says Michael Kennedy, a vice president with Network Strategy Partners. "If you look at service providers now, the best that most of them offer are gold, silver and bronze [service levels] in terms of QoS guarantees on the backbone." He adds that moving MPLS closer to users "would go a long way toward offering a grade of IP that businesses expect."

Kevin Mitchell, an analyst with Strategic Network Partners, is more skeptical of the RS 38000's hardware-based MPLS. While interesting in theory, he says, putting MPLS in an ASIC could cause problems for service providers.

"Having MPLS in hardware could be a weakness" when upgrades to the MPLS standard are developed, he says. Riverstone would have to upgrade its hardware in such a case, "and that's an expensive upgrade path for [service provider] customers."

Riverstone says RPR technology will be a boon to



Riverstone's RS 38000 is targeted to sit on the metropolitan area core.

service providers by combining the simplicity of Ethernet with the resiliency of SONET.

"RPR optimizes fiber for Ethernet," says Andrew Feldman, Riverstone's marketing vice president. SONET commonly uses two fiber rings, with one ring utilized for failover. With RPR, carriers can put Ethernet traffic over both rings in a SONET network, thus doubling the ring's capacity. RPR also lets inexpensive Ethernet replace million-dollar SONET switches on the ring, Feldman says.

The RS 38000 is available now to carriers, with WAN modules ranging from T-1 to OC-48. OC-192 modules for the device are expected this summer.

Riverstone: [www.riverstone.net.com](http://www.riverstone.net.com)

## Start-up Peak XV caters to IP service providers

Start-up offers network consulting, installation and management.

BY TIM GREENE

SAN RAMON, CALIF. — Peak XV, an upstart IP-design and management firm, is trying to take advantage of the fact that it's no easy chore to set up carrier IP networks that support voice, data and video services.

Peak XV is building a team of network engineers to consult with service providers that want to upgrade their networks to support IP services or are building such networks from scratch. The company will evaluate carriers' networks, and plan, design, recommend equipment and install IP infrastructure.

Once a network has been upgraded, Peak XV can also manage and maintain it from Peak XV's network service management center being built in Alexandria, Va., which is scheduled to come online in March. This center will manage IP services at Layer 3 and above.

Eventually, in addition to the nuts and bolts of the networks, Peak XV plans to offer business consulting, such as recommend-

### PROFILE: PEAK XV

**Location:** San Ramon, Calif., and Bangalore, India

**Founded:** December 1999

**Primary business:** Designs, deploys and manages next-generation IP networks for carriers and service providers, and integrates the networks with existing infrastructures.

**Financing:** \$21 million from DCM-Doll Capital Management, Oak Investment Partners and e4eVentures.

**Employees:** 200

**Competitors:** Predictive Systems, Greenwich Technology Partners, Callisma.

**Fun fact:** Founder Ashok Murthy is a ranked ping-pong player in India.

ing to service providers what services they should offer corporate customers.

While an ambitious goal for a start-up, Peak XV has backing from several venture capitalists (see graphic) and boasts as a member of its technical advisory board Wu-Fu Chen, the founder of several successful start-ups. The company took the name Peak XV — pronounced "Peak 15" — from British map-

makers' original designation for Mt. Everest.

It already has some successes in its first year, landing Internet caching company Inktomi as a customer as well as Nortel Networks. Peak XV has helped build a carrier IP network for one of Nortel's customers. Nortel will not name the carrier, but says Peak XV personnel helped set up the customer's network opera-

tions center for a VPN service.

While Nortel has expertise configuring its own Shasta 5000 Broadband Service Node, it used Peak XV to help integrate the gear with Cisco routers in the same network. "They were well-trained and helped us troubleshoot the equipment," says Mark Pope, a project consultant to Nortel.

The company now has 200 employees, most of them engineers who boast Cisco certification as network architects and internetworking experts, the company says. They also hold certification from 3Com, Check Point and the former Cabletron. Its main training center is in Bangalore, India, the country's high-tech center.

Peak XV is also building an interoperability test center in San Ramon, Calif., where it runs equipment through its paces. Based on results so far, the company will recommend gear from Cisco, Nortel, Juniper, Redback, CoSine Communications and Clarent, among others.

Peak XV: [www.peakxv.net](http://www.peakxv.net)

**Avici,** continued from page 31

port OC-48c module that extends the number of OC-48c ports per TSR bay from 40 to 80. That line card will also ship this quarter, Avici says.

The new OC-192c and OC-48c line cards support Avici's Composite Link technology, which lets customers dynamically aggregate multiple interfaces to create a single, logical, high-speed trunk between routers. Users can also migrate from OC-48 to OC-192 while their routers and networks are in service, Duffy claims.

Duffy would not divulge the names of customers trialing or deploying OC-192 or OC-192c. But one customer is expected to announce OC-192 capabilities soon.

The OC-192c line card will carry a list price of \$295,000, while the dual-port OC-48c cards will cost \$145,000. □

# Enterprise Applications

Intranets, Messaging/Groupware, E-commerce, Security, VPNs, Network Management, Directories



## Briefs

U.S. e-commerce firm **Mercata** will close at the end of this month. The privately held firm says it has been unable to find sufficient financing. The firm also withdrew its IPO filing.

Mercata was founded in September 1998 and opened for business in May 1999. It provides Internet-based group-buying services under the slogan, "The more people who buy, the lower the price." Mercata will accept orders until the end of January and will accept any returned goods postmarked by Jan. 20. Microsoft co-founder Paul Allen's venture capital firm Vulcan Ventures was Mercata's founding investor. Mercata completed two other rounds of funding, generating a total of \$75 million.

Mercata: [www.mercata.com](http://www.mercata.com)

Microsoft's enterprise portal product, once code-named Tahoe, will now be known as SharePoint Portal Server. The company also announced its near-final beta version of the product, which will provide portal integration between Microsoft Office and Windows. The software will let companies integrate document management, search, subscriptions and online discussions into their document collaboration process. SharePoint Portal Server is expected to ship later this year.

Microsoft: [www.microsoft.com](http://www.microsoft.com)

ClickNet Security Technologies, which markets the Entercept software product for preventing unauthorized access to servers, has changed its name to Entercept Security Technologies. The company last week also said it has received \$33 million in funding from new investors Dell, Intel Capital, Sun, JK&B Capital, UBS Capital Americas and Diamondhead Ventures.

Entercept Security Technology: [www.entercept.com](http://www.entercept.com)

## SLA picture clearing up for ASP users

ASPs expected to rely on service-level agreements to differentiate offerings.

BY JENNIFER MEARS

Many application service providers now offer service-level agreements. The problem is most customers don't quite know what to ask for when it comes to SLAs, and service providers are still largely unsure about just what service levels they actually can guarantee.

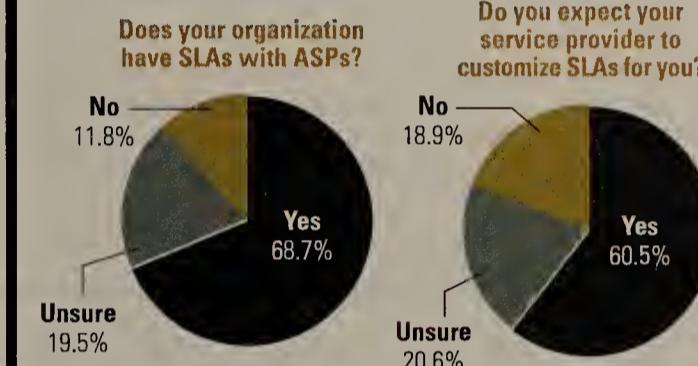
But expect the SLA picture to become clearer in the months ahead, partly as a result of recent standards efforts. New standards guidelines will give application service providers (ASP) a place to start when creating SLAs.

SLAs have been a complicated issue for ASPs, which themselves are complicated businesses. ASPs rely on a mix of infrastructure that they own and that partners provide them, including Internet connectivity, server farms, software and the actual applications.

"A lot of my customers are very bitter about the ASP model," says Stephen Sopko, executive vice president

### Lay of the SLA land

Here's a sample of customers' thoughts on ASPs based on a survey of 189 users:



SOURCE: ASP INDUSTRY CONSORTIUM

of Contract Broker, a firm that streamlines the services contracting process.

"Many have just come out of a bad experience. They've had one of those blowups and the ASP pointed to some engineering jargon and said, 'We're not responsible.'"

### ANALYSIS

"Now the market is starting to understand what the ASP model is about, realizing that there is not a lot for ASPs to differentiate on other than service levels," says Audrey Apfel, an analyst with Gartner Group.

See **SLA**, page 34

## OpenNetwork boosts access control software

BY JOHN FONTANA

CLEARWATER, FLA. — OpenNetwork Technologies is deepening the hooks into enterprise directories by bolstering its software for controlling access to Web-based applications and data.

The company recently released Version 4.5 of DirectorySmart, software that provides access controls based on roles and policies. The software relies on an underlying directory compliant with the Lightweight Directory Access Protocol (LDAP) to supply user information. DirectorySmart allows administrators to assign application access rights to those users and to delegate management of access rights among various administrators. The 4.5 software also includes new access control and user management features.

OpenNetwork also recently released DirectorySmart for Microsoft Active Directory, which includes all the features of 4.5 and an optional set of services for

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migrating users between Windows NT and 2000.

The company is competing with Oblix, Netegrity, IBM and Securant for securing access to Web servers, most notably those used for e-commerce.

"Companies are increasingly concerned with how to increase security of

the information they expose through their Web sites," says Phil Schacter, an analyst with The Burton Group. "These systems are more manageable and scale better than anything offered out of the box with a Web server."

Schacter says OpenNetwork is doing some smart things, such as providing a high degree of LDAP integration and delegated administration.

OpenNetwork is responding to the challenge with DirectorySmart 4.5, which adds features for quickly creating an organizational management structure in large companies, fine-tuned access control, single sign-on capabilities, and enhanced delegation and reporting tools.

A key feature is the streamlined process for creating a hierarchy of an organization's divisions and allowing individual administrators to take control of designated portions of the hierarchy. Previously, DirectorySmart forced users to manually create an organization.

See **OpenNetwork**, page 34



'Net Insider . Scott Bradner

## WHY DID YOU THINK THEY WOULD WORK?

It may be strange, but I don't really like most advertising I see on the Internet. Actually, that's not quite right. Since I studiously ignore the ads on the Web sites I visit, I'm not sure if I would like the ads or not.

I do know that I do not like the ads that manage to break through my attempts to ignore them. Thus, I may not be an ideal person to talk about the long-term viability of ad-based Internet sites. But I do find it hard to see a reason to be hopeful about most of the sites I've seen.

Clearly, advertising can work. Multibillion dollar broadcast TV, newspaper and magazine businesses prove there is something there. Some alternatives to advertising-supported media, such as government financial aid and its too-often associated con-

tent control, are less than attractive. Others, like the subscription-based access used by premium channels on cable TV or some Web sites such as *The Wall Street Journal*, can work quite well. But they require that the user be identified, which can be a pain and presents a privacy worry.

Internet ads have the potential to be different from most non-Internet ads in that the advertiser can find out if they work. This is harder to do in most current advertising arenas because advertisers don't normally only do one kind of advertising at a time. The normal mode of operation seems to be advertising campaigns with coordinated ads in multiple forms, from bus wrappers and subway placards to TV and newspapers spots. The advertiser cannot easily find out the effectiveness of each

individual form.

But on the Internet it can be a lot easier to determine if the ads work. This is particularly true now, considering the move to ad fees based on click-through is what counts rather than just the number of eyeballs that see the ad. It's hard to imagine something more terrifying to an ad agency than to have its success measured on a per-ad basis based on actual results.

Ad companies are publicly salivating over the prospect of being able to produce ads targeted to users based on their individual tastes or current location. But these same companies don't seem to get that Internet users are concerned about random third parties knowing too much about them. DoubleClick's almost 2,500-word privacy statement is an example of how little

the ad industry understands privacy concerns. It would only take 100 words to tell me what I need to know.

It seems so obvious to me that Internet advertising has too many problems to be able to support things such as "free" PCs or Internet access that I can't understand why anyone would ever have thought it could. But it seems many investors did. I don't envy the returns they are getting on their investment.

**Disclaimer:** "Harvard" and "free" are not normally associated terms, and the university has not expressed a view on this topic.

*Bradner is a consultant with Harvard University's University Information Systems. He can be reached at [sob@sobco.com](mailto:sob@sobco.com).*

**SLA,**  
continued from page 33

### Figuring out SLAs

The industry has stepped in to help ASPs figure out the SLA conundrum. In November, the ASP Industry Consortium and the Information Technology Association of America (ITAA) separately released ASP SLA guidelines. The ASP Industry Consortium's Service Level Agreement Subcommittee plans to steer industry members toward a standard SLA, while the ITAA has an online SLA library that was set up at the request of members looking for help in drafting SLAs.

The general theme from both industry groups is that ASPs should be clear about what they can and can't deliver. For example, ASPs must depend on telecommunications companies to deliver applications to customers, but don't have control over network problems. What ASPs can do, however, is promise delivery of applications by using redundant networks so that when one telco has a network problem, application services can be delivered via an alternate route.

A survey conducted by the ASP Industry Consortium found that only about 70% of ASP customers have SLAs. However, a majority of respondents agreed the best method to ensure outsourcing works is to have such a guarantee in place.

As a result, SLAs are becoming the norm among ASP offerings. Qwest CyberSolutions, for example, unveiled standard SLAs in October.

Called QCS Proof Positive, Qwest's SLAs offer a three-tier approach that lets customers pay for the availability

they need — from 99% application availability to 99.99%. The SLAs also address response time, disaster recovery and storage utilization.

Even smaller ASPs, such as AristaSoft in San Jose, make sure customers have SLAs. "If you're offering mission-critical applications, which we are, you must have [SLAs]. There's no other way," says Lorenzo Martinelli, AristaSoft's vice president of marketing.

But he agrees with others who say that as the market matures ASPs' track records will matter more than SLAs.

In fact, Oracle Business Online is so convinced that SLAs are more time-consuming than they're worth that it scrapped its SLAs last summer in exchange for a two-page satisfaction guarantee. So, if during any month a customer "is not satisfied for any reason, we will give you a 20% credit," says Business Online Vice President Don Haig.

### Here to stay

Most ASP executives, however, expect SLAs to be a fixture. The challenge is to present the SLAs in language that spells out the business service the ASP is promising to deliver and clearly defines what the ASP is responsible for. In the past, customers expected ASPs to solve all their problems and ASPs, wanting to make the sale, were eager to deliver, observers say. Nowadays both sides are a little savvier.

It wouldn't be surprising to see customers push for SLA features such as customer-based application monitoring, rather than monthly reports generated by an ASP. This way, customers can see for themselves how applications are functioning, says Gartner's Apfel.

Customers should ask for a lot more visibility into service providers, and ASPs that don't respond "aren't going to make it," she says.

Pradeep Khurana, chairman of Surebridge, an ASP in Lexington, Mass., agrees. He says the main concern for customers with any SLA should be application-level issues and response time to application problems.

### Not looking for kickbacks

What happens if an ASP doesn't meet its SLA guidelines? Most promise a credit. But when a company places processes that are integral to its business in the hands of an outsider, it's looking for steady service, not a kickback.

"Nobody goes into a contract saying, 'Oh, great, I was able to get a 100% credit on my SLA in month four,'" says Dave Collier, a vice president for ASP USinternetworking. "They go into the contract saying, 'I'm going to take this headache off of my plate and I'm going to worry about my core business decisions.'"

SLAs give customers assurance that an ASP has "skin in the game," he says.

Interliant's senior manager of quality, Christine Hansen, puts it this way: "The SLA is a fallback. If things aren't going well as a customer, you fall back on the SLA and say, 'Look, you're breaching the SLA and I want penalties assessed.' The goal should be that there are no penalties — you make the service and everything is good."

John Vogus, CEO of AllBooks4Less, contracted with USinternetworking to get his online bargain book-selling business up and running. He says getting an SLA didn't matter when he chose his ASP. What drew Vogus to USinternetworking was the service

provisioning infrastructure the company offered and the level of trust the company engendered.

What Vogus and other ASP end users have found is that being able to feel that you are truly in a partnership with the ASP is more important than the percentage of uptime you're guaranteed or the amount of the credit you'll get if something goes wrong.

Surebridge's Khurana says customers should use the SLA as a guide. "What's in the SLA is going to tell what kind of a company [the ASP] is. What it focuses on."

**OpenNetwork,**  
continued from page 33

tional hierarchy.

Other features include the ability to work across multiple domains, which provides a single sign-on capability. An enhanced delegated authority feature pushes self-service capabilities to end users, and a fine-tuning control dictates access to features of individual applications. DirectorySmart is compatible with iPlanet Directory Server, Active Directory, IBM SecureWay and Novell eDirectory. The firm offers an option to purchase an iPlanet server with DirectorySmart.

The software runs on Windows 2000 and NT, Sun Solaris and IBM AIX. CPU-based pricing is \$50,000 per server.

## Directories

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# Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

## Ask Dr. Intranet

By Steve Blass

What is split DNS? I assume it means using an external and internal Domain Name System for an ISP/ASP. If so, can you refer links to tell us the best way to set it up?

Good resources for questions about DNS are the news group `comp.protocols.dns.bind`, the DNS Resources Directory at [www.dns.net/dnsrd](http://www.dns.net/dnsrd) and the Ask Mr. DNS site at [www.acmeweb.com](http://www.acmeweb.com). Split DNS refers to using separate internal and external DNS views of your domain's network using internal and external name servers. To set up, configure your internal name servers to forward queries they can't resolve to the external name server. Under Berkeley Internet Name Domain (BIND) 4, use the "forwarders" directive. In BIND 8 systems, use the "forwarders" substatement to configure forwarding. Your external DNS records are configured to contain only a small zone file for your domain, listing things such as Web and FTP server addresses and any translated server addresses you want to publish to the world. Your internal servers hold only the DNS records for your internal networks. When internal users look up host names, the query is answered by internal DNS servers, even if the request is forwarded to an external DNS server for resolution. Internet users who look up host names in your domain are answered by external DNS servers that only know about the publicly accessible resources.

Blass is a network architect at Sprint Enterprise Services in Houston. He can be reached at [dr.intranet@paranet.com](mailto:dr.intranet@paranet.com).



## Real-time SLA monitoring tools

BY JAMIE WARTER

Network executives who buy corporate Internet services are no longer willing to buy new IP-based services sight unseen. They want active service-level agreement (SLA) verification to help prove that their provider will deliver the goods. And they want immediate feedback on relative performance metrics to determine if they're getting what they contracted for.

Today's SLA monitoring technology, however, is more likely to report problems after the fact, when it's too late to do anything and nearly impossible to determine the source. Service-level measurement today typically happens at the network's core. But to be credible, service-level performance must be measured from the customer's perspective, where the customer interacts with the network.

Yet true SLA verification is within reach. New classes of hardware, called verifiers, sit at the demarcation point between a customer and service provider — and eliminate the blur that has prevented accurate service measurement by offering the information in real time. This also eliminates the finger-pointing that weakens relationships with service providers.

Identifying service demarcation points, or demarcs, delineates the "change of control" boundary where a provider's network begins and a customer's network ends.

Enterprise customers simply plug verifiers in-line next to a router or firewall. Verifiers run a real-time operating system and application-specific test modules. For pervasive SLA verification, verifiers must sit in-line without interrupting it, which means a dedicated hardware verifier.

Verifiers time-stamp packets. Active synthetic transaction tests and passive monitoring use the time-stamp engine to maximize test accuracy.

Once hooked up to the Internet, a verifier learns, through an automatic rendezvous protocol, which server to talk with. It downloads its configuration and the tests it will run from that server. When a verifier authenticates with the central reporting software system, the two recognize

each other through a unique key assigned specifically to each verifier. Verifiers maintain a secure, encrypted, mutually authenticated connection to the central software system at all times, uploading test results, and downloading configuration updates and new software modules.

A verifier works like a turnstile, recording all network traffic passing through it. Verifiers also mimic a customer's use of a network as they run sophisticated tests of services, such as voice over IP or VPNs, while still collecting precise network statistics. The verifier relays information to

service from a customer's perspective requires crossing firewalls. While they must be encrypted and authenticated for carrier deployment, verifiers can be designed not to open security holes in the firewalls for some protocols and instead use standard firewall port numbers, such as those for HTTP, which are universally allowed through firewalls to permit Web browsing.

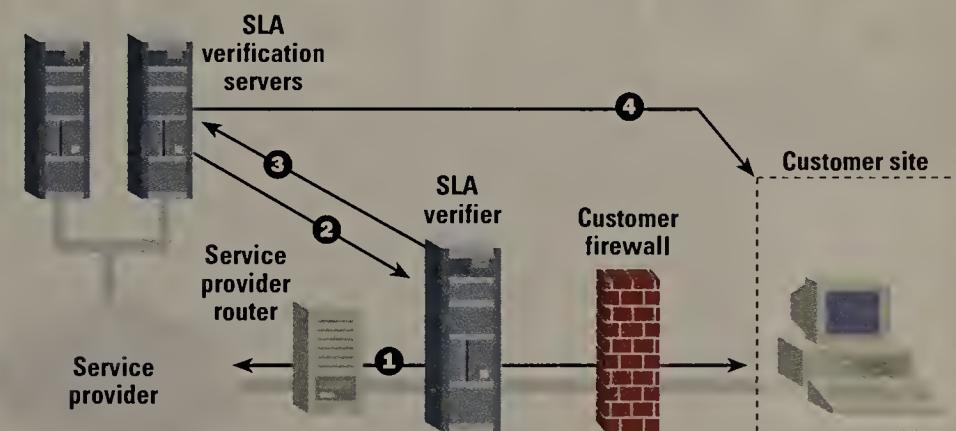
There's no need to add, reconfigure or customize a firewall to support the operation of a verifier.

From security to real-time monitoring,

## HOW IT WORKS

### Real-time SLA verification

Hardware-based verifiers sit at the dividing line between a customer site and a service provider's network. They collect information that is checked against the requirements of a service-level agreement (SLA).



1 The verifier monitors traffic between the customer site and the service provider.

2 The verifier also connects to servers that provide the proper configuration and tests that the verifier needs to run.

3 Reports from the verifier are sent back to a central SLA verification system, which analyzes the test results and determines whether the SLA is being met.

4 The SLA verification systems send real-time reports and alerts to the customer.

the central reporting software that analyzes it, compares it with SLA stipulations and oversees the verifier's operation.

Innovations in software hierarchical design let hundreds of thousands of verifiers be deployed on a network. The software integrates with provisioning, reporting and management systems to report service levels to customers, warn them of network problems and incorporate SLA performance results into billing.

Verifiers sitting in the network contain multiple levels of fail-safe capabilities so they don't impede traffic or disrupt the network should it lose power, for example. Security is also an issue when verifying

customers today expect providers to verify service levels to the best of the latest technology's ability. A combination of continuous traffic analysis and proactive network testing is the most powerful way to prove service performance. Ultimately, verified service levels build not only trust and happy customers, but also help enterprise customers move to advanced IP services because they're convinced they'll know what they're getting.

Warter is vice president of marketing and business development at Brix Networks. He can be reached at [jwarter@brixnet.com](mailto:jwarter@brixnet.com).

### Got great ideas?

Network World is looking for great ideas for future Tech Updates. If you've got one, and want to contribute it to a future issue, contact **Neal Weinberg**, Features Editor ([nweinberg@nww.com](mailto:nweinberg@nww.com)).



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Gearhead . inside the network machine . Mark Gibbs

## FROM HOME PAGES TO POPULARITY

This week we take a break from TCP/IP ports and sashay back into the realm of languages. Our target is PHP, a language that has come a long

way from its humble roots as a set of macros for building personal home pages on Web servers. Today, PHP is a server-side scripting language that is

officially called PHP: HyperText Pre-processor.

PHP is an amalgam of several languages — much of its syntax is borrowed from C, C++, Java and Perl. What's so great about PHP? Well, the fact that it's free helps ([www.php.net](http://www.php.net)), but there's more: PHP is open source; runs under

Win32, Macintosh, Unix and Linux with all leading Web servers; it's easy to learn and use; and the latest version, PHP4, runs as fast as Microsoft's Active Server Pages technology.

PHP4 has become wildly popular and is now a major language in Web scripting. According to the October 2000 NetCraft Web survey ([www.netcraft.com/Survey/](http://www.netcraft.com/Survey/)), PHP was running in more than 3.8 million domains on 715,283 IP addresses ([www.php.net/usage.php](http://www.php.net/usage.php)).

PHP4 has powerful extensions for services such as XML, Lightweight Directory Access Protocol and Internet Message Access Protocol and includes direct access for a large number of database products, including Oracle and Informix.

PHP works like many other Web scripting languages — Web pages requested by a browser that contain embedded PHP scripts are parsed on the fly by the PHP interpreter on the server, and the modified page, stripped of the PHP code, is sent to the browser ([www.zend.com/zend/technology.php](http://www.zend.com/zend/technology.php)).

The interpreter for the PHP language is the Zend Engine. Created by Zend Technologies ([www.zend.com](http://www.zend.com)), it is licensed to users for free and is also open source. Zend Technologies also recently released a free code optimizer ([www.zend.com/zend/optimizer/](http://www.zend.com/zend/optimizer/)), which it claims doubles the speed of PHP scripts.

The Zend Engine reads PHP scripts, compiles them and executes the compiled code. Zend Technologies will soon offer a product called Zend Cache, an enhancement to the Zend Engine that capitalizes on the read-compile-execute model by caching an "intermediate" code version of the script to reduce compile time for future executions and to reduce server loading. Pricing is not yet available.

You might want to create commercial products using PHP. Zend Technologies will soon release something called the Zend Encoder (pricing is also not yet available) that encrypts a PHP script by turning it into intermediate code so your algorithmic sleights of hand can be kept private. To run the resulting application you will need the free Zend Loader, which will be invoked whenever an encoded script is run to pass the intermediate code to the Zend Engine.

Next week, we'll take a look at the PHP language. But before we take our leave, we'll mention an interesting news item: The first PHP scripting virus, called PHPNewWorld, has just been found.

The virus has no payload and seems to only affect Windows systems. And it can't infect other computers; it only infects files of the types .php, .hm, .html or .htt in the c:/windows subdirectory. This virus is easily detected and countered but it illustrates an interesting potential problem for all scripting languages — not just for PHP.

Until next week, speak in tongues to [gearhead@gibbs.com](mailto:gearhead@gibbs.com).

The advertisement features a woman's face with butterflies flying around it. The text reads: "EDGE-FX® CACHE KEEPS CONTENT CLOSE TO YOUR USERS." The F5 logo is in the top right corner.

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## Editorial

### Helping Web customers help themselves

If you did any online shopping over the holidays you probably encountered the bane of the e-commerce world — the inability to help surfers easily locate specific items.

Amazon.com, for example, sells tools. But try logging on and searching for "wood routers,"

handheld machines used to work on wood. The company's search engine returns five items — two books and three cutting bits that go in routers.

Now any tool merchant worth its salt will sell routers, so this is frustrating for me, the consumer, because I know Amazon is hiding them in there somewhere.

And it should be frustrating for Amazon too, because of the five items its search engine returned four of them cost less than \$20 and the fifth costs \$45. Routers cost \$200 to \$300. Frustrated by Amazon's search results, I might bolt to one of the 50 other tool merchants on the Web.

Enter EasyAsk, Inc. This young company aims to help online merchants solve this thorny problem. Its solution: Replace the keyword-driven relevancy text searches used by most sites with a natural language search/query tool supported by automatically built (for the most part) dictionaries that reflect site-specific content. These are used to fine-tune each search before it is processed, limiting the number of results that float to the surface.

But the company's tool goes a step further — it searches multiple sources, both structured and unstructured. So besides scanning product descriptions, an EasyAsk search will scour category assignments and other attributes stored in relational databases.

Together these capabilities mean that if your customer types in "men's no-iron pants," but you have classified them as wrinkle-free, your Web site will be smart enough to recognize the phrase-level synonym.

EasyAsk founder and Chairman Larry Harris says his tool can even generate precise SQL queries for questions that include things such as "at most \$100." That means visitors to your Web site could pose natural language questions like "hiking boots under \$100" and get just that.

The tool looks pretty slick. Check out the demos at [EasyAsk.com](http://EasyAsk.com).

The one drawback is it is only available on Windows NT, while many Web sites are based on some flavor of Unix. The company is working on a Java-based version that is expected to go into beta testing in February.

— John Dix  
Editor in chief  
[jdix@nwfw.com](mailto:jdix@nwfw.com)

## Message Queue

### UNFAIR GENERALIZATION

Your article "Caution flags flying as CLEC woes mount" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2436) slammed the competitive local exchange carrier (CLEC) industry with a generalization of market perceptions. While perceptions are often true, they are unfortunate in this case because there are CLECs competing effectively that do not deserve to be lumped in with the others. KMC Telecom is one such CLEC — and one that meets all of the criteria of the "CLEC customer tip sheet" that runs with your article.

KMC owns and operates its own fiber-optic backbone in the 39 cities it serves or plans to serve by the end of first quarter 2001. We offer a full range of business communications services, recently posted a 57% third-quarter revenue increase, and our customer base is growing.

While your story accurately points out that some CLECs are having problems, you might have more emphatically noted that many CLECs are making strong and innovative contributions — serving their customers, putting pressure on incumbent monopolies and generally advancing the state of the telecommunications industry.

Bill Lenahan  
CEO  
KMC Telecom  
Bedminster, N.J.

### VOTE WHILE YOU EAT

In her letter about Internet voting ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2528), Gloria Perri asks if there's a way to ensure citizens get just one vote. One way is to assign each registered voter a personal ID number. Polling booths could also be set up at McDonald's, since they're everywhere. All those eligible could vote, and much more cheaply than doing a recount.

Robert Lee  
San Diego

### SATISFIED CUSTOMER

My experience with Verizon DSL was the exact opposite of Kevin Tolly's as related in his column, "Verizon's DSL horizon" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder:

E-mail letters to [jdix@nwfw.com](mailto:jdix@nwfw.com) or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

[www.nwfusion.com](http://www.nwfusion.com)

## MORE ONLINE

Find out what readers are saying about these and other topics.

DocFinder 2521



2437). The equipment arrived before the installation date and the service was active on the installation date. Except for the occasional mail and news server outages, I am generally satisfied with the service. The only problem I have is if I disconnect from the network and put my PC into suspend mode. I can't reconnect after waking up the PC; I have to reboot. I guess I should contact Verizon tech support, but they'll probably tell me it's a Windows problem. Because I know what the problem is, I know how to work around it.

Anthony Louie  
Technical specialist  
Guardian Life Insurance Company  
Bethlehem, Pa.

### LOST CAUSE

I agree with the issues Scott Bradner mentions in his column "The importance of getting lost" ([www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2438). Do I want a record existing of everywhere I go? Do I want Big Brother to be able to find out at a moment's notice where I am? Not on your life! I am not into illegal or immoral activities — I am just into having my personal privacy and individualism, important and fading commodities in this modern world.

I read articles heralding the advancing technologies that tout thumbprint and retinal scanning as a great boon to commerce. The idea scares me. I once received an expense reimbursement check from my church, which was issued by a bank down the road. I went in to cash it but because I didn't have an account there, they wanted my thumbprint — my driver's license and major credit cards weren't acceptable. Maybe George Orwell wasn't wrong, he just got the year wrong.

Lest anyone think I am some backwoods antitechnology hermit, I am a product manager for a major cellular provider. I help develop new applications for emerging technology. I usually have a cellular phone and Global Positioning System unit when I go hunting and hiking. I frequently use a laptop and cellular phone to access my e-mail. But there is a time to turn off the technology and get lost.

Daniel Bell  
Product distribution manager  
Bluegrass Cellular  
Elizabethtown, Ky.

Totally Unplugged . Ira Brodsky

## TELECOM CARRIERS NEED TO SMARTEN UP THEIR PIPES

**H**ammed in by plummeting bandwidth costs on one side and restrictions on participating in related businesses on the other, traditional local and long-distance carriers are searching for a way out.

Many carriers hope consolidation will be their deliverance. US West hooked up with Qwest Communications. Southwestern Bell swallowed up Pacific Telesis, then Ameritech, and is now merging with BellSouth. Bell Atlantic is acquiring GTE. Vodafone snapped up Airtouch Communications and Mannesmann. The list grows longer almost weekly.

But is consolidation really the answer? The problem is not that incumbent carriers aren't big enough. The problem is that the telephone business is evolving into the multimedia communications business.

That's not to say there is no place for consolidation. A handful of carriers may ultimately succeed as global or regional players, although I predict they will end up looking more like e-tailers than phone companies.

But for others, consolidation is clearly not the answer. AT&T is voluntarily splitting into four separate companies. MCI WorldCom tried to acquire Sprint but never got past the antitrust gauntlet.

The long-term solution for most carriers is to move up the value chain. Fortunately, while profits for local and long-distance phone services are shrinking, new wireless, fiber optic, Internet protocol, broadband access and e-commerce technologies are creating opportunities for higher-margin services.

In the past, telephone companies were proud of their "dumb pipes" — circuits that just transported customer traffic from one place to another. But today's customers demand more, and more can be done for less. So the only remaining question is whether carriers should upgrade to "smart pipes" — circuits that boast optional extras — or go even further, providing complete, end-to-end offerings.

Most vendors would love to snare 100% of their customers' business by delivering complete solutions. But customers' requirements are becoming increasingly complex. The only reliable way to completely meet their needs is to know each customer's business inside and out. That's not practical when your customers represent virtually every industry.

The best option for most carriers, therefore, is the



smart-pipe model. Smart-pipe carriers offer more than just transport, but they don't try to do it all. Instead, they provide value-added resellers and other third parties features and technology hooks that let them offer end-to-end solutions — for example, letting resellers and even customers provision and manage their own bandwidth.

That said, telecom carriers still will need to reinvent themselves if they are to succeed as smart-pipe carriers. Mergers and acquisitions will play a role, but so too will joint ventures, strategic alliances and even spinning off assets that no longer fit the business strategy.

Indeed, both extremes — gigantic mergers and going it alone — are starting to look like relics. In the New World of broadband communications, network carriers will find themselves immersed in a sea of relationships. The biggest winners won't be the biggest carriers but those best able to manage those relationships.

*Brodsky is president of Datacomm Research Co. of Chesterfield, Mo. He can be reached at [ibrodsky@datacommresearch.com](mailto:ibrodsky@datacommresearch.com).*

Industry Commentary . Frank Dzubeck

## FEAR, UNCERTAINTY AND DOUBT: THE STATE OF COMMUNICATIONS

**D**uring the past several months, I have been called on to be a "notable quotable" on the state of the communications industry. It seems that in the public media's opinion, customer negativism abounds, and behind every vendor quarterly announcement lurks an economic disaster. We live in an age in which perception is reality and right now, the communications industry is perceived to be in an ever-decreasing spiral of economic decline. The reality is just the opposite.

The first issue always is the dot-com implosion and its impact on the Internet. The dot-com problem is associated with business-to-consumer usage and the failure of the business-to-consumer companies to achieve profitability. Too much venture capital was placed into "if we build it, they will come" companies. Now those investors are seeing the effects of flawed business models that used expensive media advertising to entice potential customers into a new buying experience, but offered little more than a way for people to do comparative shopping before going to a physical store to buy a service or a product.

Venture capital money is now directed almost exclusively to business-to-business, corporate-oriented dot-com investments. This changeover to Web-based business processes for large and small corporations is now a global phenomenon, not just a U.S. innovation. Increased productivity and cost savings are economic factors that are driving business-to-business dot-com financial success, not the perceived consumer experience as in the business-to-consumer world.

The second issue is the downfall of the competitive local exchange carriers (CLEC) and the entire state of the communications service provider indus-

try. If a few rotten apples could spoil the entire barrel, then that describes the CLEC perception problem. The pure data CLEC has a problem if its business model focused on Tier 1 cities with heavy competition, and if it used price as a way of attracting the consumer DSL buyer. The costs of consumer marketing, installation and support destroyed profit margins. The consumer only wanted connectivity, not additional services; therefore, value-added revenue sources became nonexistent for the data CLECs.

However, not all CLECs are focused solely on Tier 1 cities and consumers. There are well-funded and economically sound CLECs that have business plans built around a multiservice structure (voice, data and even video), are focused on business users and have only the local exchange carrier (LEC) as a competitor in their target geography.

This is a winning strategy for economic success. As an example, a voice CLEC sells DSL services that combine voice and data access using a single DSL line instead of a LEC access line for each telephone, fax and data connection. There are immediate cost savings to the buyer and quick profitability for the seller. Value-added services such as universal mailboxes and IP multiple domain names/e-mail addresses are also recurring revenue/profit generators.

The third issue is the reduction in capital expenditures by the communications service providers. This reduced spending portends doom for vendors that sell to service providers. Again, negativism by the media vs. reality creates fear, uncertainty and doubt. The reduction in long-distance, per-minute costs is causing grief to the likes of WorldCom and AT&T, but not to the regional Bell operating companies and international or next-generation carriers. Vendors of

Class 4 and 5 circuit switches have an income problem, but not IP router, ATM switch or optical transport equipment vendors. Remember that Internet is doubling each quarter and therefore must be accommodated by capacity-growth capital expenditures within all service providers. The situation is more critical outside the U.S. Competition, in addition to capacity growth, is driving telecom capital expenditures in Europe and Asia. If the post, telegraph and telephone administrations do not spend to build new optical/IP networks, their competition in a deregulated environment will destroy them in the marketplace. Communications equipment vendor forecasts for 2001 have verified this fact at every analyst conference I have attended in the past quarter.

The state of the communications industry is healthy and growing. For some people change is difficult to understand when it is occurring at Internet speed rather than calendar speed. Technology is even harder to comprehend when it is simultaneously shifting from circuits to packets to photons. Least understood are operations changes within service providers and their equipment vendors to Web-based computer systems to maximize productivity and profits, and to "function globally yet act locally." Change is healthy and necessary for industry growth, whereas fear, uncertainty and doubt are panic responses to change. What clears the air is a set of business constants that we all must take into consideration every business day, even in the Internet Age — revenue, profit margin and net profit.

*Dzubeck is president of Communications Network Architects, an industry analysis firm in Washington, D.C.*

# DIARY

**Editor's note:**  
**The following**  
**is a network**  
**engineer's first-person**  
**account of a disaster**  
**that occurred at his bank.**  
**Bank officials agreed to**  
**let him write this sensitive**  
**story as long as the**  
**bank was not identified.**

**T**he sixth and top floor of my bank's 70,000-square-foot headquarters had never been level. One row of desks along the outside wall had been placed on top of a two-inch step to raise them to the height of the rest of floor, and there was a running joke about pencils rolling off desks.

During a remodeling to fix some of these cosmetic problems, workers discovered large cracks that exposed corroded tension cables — the tendons that hold the building and its prestressed concrete together. This meant the structural integrity of the building couldn't be guaranteed. Upper management quickly declared a crisis and ordered everyone to evacuate the building.

Our disaster relocation plan went into effect. The stakes were high: If operations and systems went down it would cost the bank and its parent company millions of dollars in lost revenue and lost customers, as well

as creating a systems, data, monetary and regulatory chaos from which it might never recover.

Headquarters is the brain and nerve center for a banking empire extending across five states. More than 300 people directly involved in keeping the remote branches in operation, as well as supporting core bank functions, were relocated.

After two weeks, the building was inspected by more qualified engineers and declared safe. We returned to headquarters.

During that two-week period, all essential functions were maintained. Users, systems and applications were successfully supported in the branches. Locally, relocated users had access to the data and applications they needed to fulfill their duties. The disaster recovery effort had been, for the most part, a resounding success.

But behind the scenes, there were plenty of frantic days and



hectic nights. Glitches kept popping up, but they were overcome with a lot of overtime and a can-do attitude. In the IS department, we learned some important lessons.

This is my account of "the event," as it's now referred to, along with some disaster planning tips.

#### Y2K: The end of the world was coming, sort of

As a part of its Y2K preparations, the bank made plans for evacuating headquarters in the event that general mayhem somehow rendered the building useless. Plans included creating and stocking two disaster sites with older computers, monitors and hubs, adding full-time, back-up servers and setting up frame relay links to the WAN.

Disaster Site One (DS1) was located 40 minutes across town in the rear of a branch of our parent bank. We added frame relay WAN connectivity, a back-up link to the company that hosts our mainframes (hereafter known as X-Company), a Novell NetWare server, a Windows NT Server, and a back-up Oracle server. More than 80 computers were stacked in closets, along with monitors, phones, cables, fax machines, printers, hubs, cords, more cables, paper and other supplies.

Optimal plans called for two engineers, the IS assistant manager, four administrators and two support personnel to set up and configure DS1 in several hours.

Disaster Site Two (DS2) was the corporate training center, 10 minutes away from headquarters. More than 20 workstations were already plugged into the network and ready to go. There were two Novell servers, an NT Server, as well as plenty of phones and other

paraphernalia stacked in the closet.

Because it was already in a state of semireadiness, DS2 only had two engineers and three administrators scheduled for support. Most personnel would then relocate to DS1, where IS would base its operations, while other employees would move to offices in remote branch sites.

Bank policy called for full server backups five nights per week, and a two-week rotation of tapes. Remote branches mailed one tape per week to headquarters for off-site safekeeping. Servers at headquarters had the same policy, with some additions. Full restores were performed on servers at both DS sites weekly. This kept applications, patches and updates current. In the event of a disaster, only data directories would need to be restored, and in the worst case, only a week of data would be lost, and it wouldn't be user accounts. Finally, all headquarters' tapes were stored in a fireproof safe at DS2.

After the great Y2K nonevent, we took all the plans, erased the "Y2K" from the title, and renamed them Business Resumption Plans (BRP). We had several scenarios, ranging in gravity from "building temporarily uninhabitable, systems up" to "building uninhabitable, systems temporarily down" all the way to "large pile of rubble."

All employees had a copy of their BRP off-site. Because personnel, applications and department needs change over time, all departments occasionally walked through their plans, verbally and on-site with the equipment and IS emergency support.

#### AUG. 16: D-day minus one

On Wednesday, Aug. 16, we had just such a test. We pulled out some dusty computers, hooked them up and waited. The operations people came; checked their logons, their applications, their access to personal and departmental data, their WAN connectivity and left. We compiled a small wish list of equipment and supplies as well as a few small configuration

changes needed, but pronounced ourselves ready for anything.

During the debriefing, we were told to prepare for an unplanned rehearsal.

#### AUG. 17: D-Day, 1800 hours

I was home preparing to go to rugby practice when my pager went off. My boss' number appeared, followed by a 911. This signifies that something bad and important is happening. She said the operations center had been declared uninhabitable, and our crisis plan was in effect.

I was sure it was the test we had been warned about. I threw my gym bag in the car and headed to our disaster site, expecting someone to be waiting there with a stopwatch who would then send me on my merry way. This did not turn out to be the case.

I was the first to arrive. This was a bad sign because beating the timers to the test site was a good hint that it was not actually a test. After trying every key on my ring three times, I finally found one that worked and unlocked the door. Then things slowly began to go south.

I had never been the first one in during our walk-throughs, and had never deactivated the alarm. I didn't even know where it was. I went on a frenzied alarm-box hunt. When I found the box, it only got worse.

The disaster site was located in a branch belonging to a different subsidiary of our parent company. As such, it had a different alarm box than I was accustomed to. I punched in my code. No go. Twice, three times, still no green light. I hit random buttons, and still the nasty red light. I waited for the alarm to sound, cops to come, and began to practice my story. An administrator arrived, and I didn't feel quite as stupid when he couldn't get his code to work either. We hit more buttons, until I finally stopped, read the buttons and saw the word 'enter' on one. We finally had access to the building, and we avoided an embarrassing encounter with law enforcement.

At our second disaster site, a recently promoted engineer had the keys to the building, but not to the server room where he needed to work.

- **Tip No. 1:** As personnel come and go, are promoted or change duties, make sure everyone has the keys and codes they need for their current disaster duties.

This crisis hit us at a bad time because we were short-staffed due to vacation and attrition. In addition, we had several new hires who hadn't yet learned our systems and applications. Even worse, the most important person in the department, our office assistant, had recently been promoted to another department. The latter issue was quickly fixed: instant demotion. All told, we had three IS staffers at DS2 and five at DS1. DS1 staff were aided by several data center and bank operations people.

All our disaster walk-throughs had been limited in scope, setting up and testing one department at a time. As it turns out, this left several large holes in our "bulletproof" disas-

## DEPARTMENTS THAT HAD TO BE RELOCATED:

- Loan center: responsible for coordinating loans in all branches.
- Data services: responsible for check processing and information retrieval.
- Treasury/cash management: responsible for making sure money goes where it's supposed to.
- Credit review: an auditing department.
- Bank card: coordinates ATM and credit cards.
- Bank operations: responsible for policy and day-to-day operations.
- Help desk.
- IS.

ter plan. The first problem came when we started setting up the users' workstations and phones. There was nothing to put them on. At DS1, we had always tested in the front room, using the same tables and chairs each time. Now we needed desks and seating for more than 80 employees, and had chairs and tables for only about 20 people.

- **Tip No. 2:** If you have a back-up site that is not permanently set up, get a detailed floor plan, sit down with department managers, and map out exactly where they want each subdepartment and user.

We also knew from our test on the previous day that we needed more monitors and hubs. We started a shopping list that would grow through the night. Several IS, data center and bank operations personnel went on scrounge missions to our headquarters with orders to grab everything they could before we were completely denied access. This included hubs, monitors, tables, folding chairs and anything else that might prove useful. We spent Thursday night setting up computers, restoring data to the disaster servers, sending people for supplies, eating bank-bought pizza, and calling the wife to say, "No, I'm not out with the boys, I'm working. Go to bed without me."

Disaster plans called for us to be set up in two hours — Hah! At two in the morning, we started the restores at both sites and called it a night. We were 90% ready, but lacked the specific department managers to provide the final pieces to the setup puzzle.

- **Tip No. 3:** Duct tape. This magic remedy will keep cords out of the way, hold things up, tape them down, or even post



signs. It will keep users from tripping on cords, cracking their heads, and worse (for me anyway) — disconnecting computers or breaking network interface cards or cables. We didn't have any duct tape on Thursday. We bought five rolls on Friday. Put a few rolls in your disaster closet.

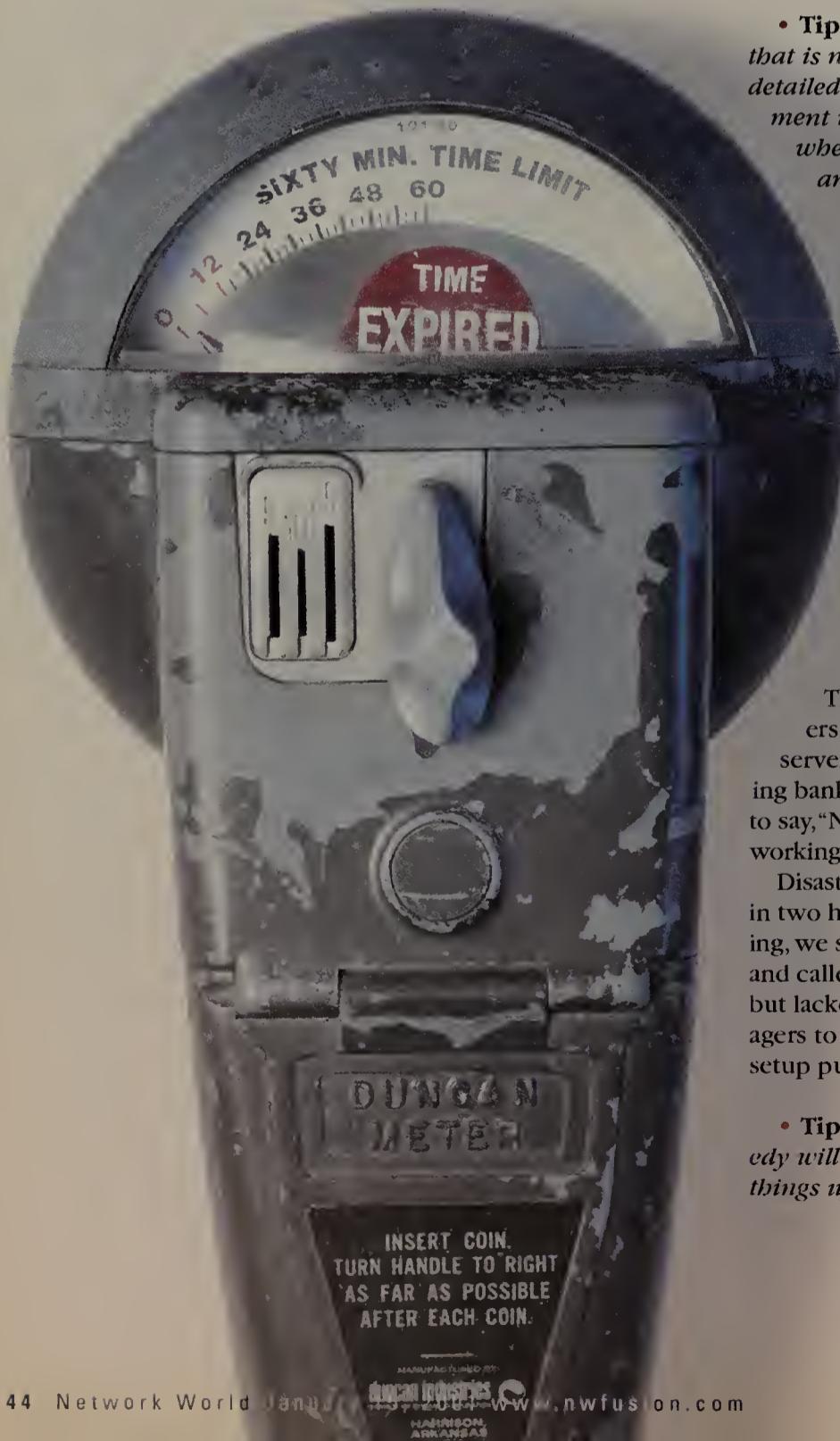
### AUG. 18: Day 2, 0745 hours

Disaster plans called for users to show up at 10 a.m. Apparently, not everyone read that part. Starting at 7:45, users began to show up, expecting phones, faxes and computers. This is when the second repercussion of our limited disaster practice sessions came back at us like a large, ugly boomerang. We never checked the licenses on the server. We never needed to — everyone could log on during the tests, and if one person can log on, hundreds, even thousands can, right?

Wrong. As it turns out, our main server, a Novell 4.11 box, was only licensed for 25 users. When the first 25 users logged on, everything went smoothly. Then Mr. 26 tried to log on, as well as Ms. 27 and Mr. 28, the vice president. We tried rebooting, but eventually had to call Novell tech support.

In the middle of the call (right after I told the engineer it couldn't be a licensing issue), Mickey, the engineer at DS2, remotely diagnosed the licensing problem, and copied a

See **Disaster**, page 46



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*Continued from page 44*

'magic' 1,000-users-can-play file to our server. That taken care of, the departmental workers could finish their emergency preparation procedures and begin to do something resembling regular office work. (Adding licenses to the server was entirely legal under our agreement with Novell, and we paid for only the extra nodes in use at the end of the quarter).

• **Tip No. 4: Make sure your licenses are up to snuff.**

Limited testing also hurt us because we hadn't configured TCP/IP on either LAN. This resulted in error messages and more user panic. Two quick Dynamic Host Configuration Protocol installation/configurations took care of this problem. More small fires popped up and were stamped out; new ones came up, more stamping. It was almost business as usual for IS support.

By mid-Friday morning, however, another key (missing) component of disaster planning came up, but this time it wasn't my fault: parking. There was none. Two lifeguards from a nearby swimming pool nicely asked us to remove our cars

from their parking lot before they were towed and sold.

We ended up paying the local Safeway to let us use 20 spots in their lot. The rest of us used on-street, two-hour parking spots. After an hour and 58 minutes, we'd run out and switch places to avoid tickets. The powers-that-be then arranged for a shuttle bus from the headquarters parking lot every morning until the disaster was over.

Another missing piece of our plan involved a secure (and essential) download process. The data processing department performs a daily download of data from X-Company. Data processing crunches the numbers, generates reports and uploads the new data back to X-Company. Because this is a secure process, X-Company only allows access to several specific IP addresses on our network. Now that we were on a different part of the WAN, the machines trying to pull the data had "illegal" IP addresses. Calls to the X-Company help desk finally resolved the issue.

At the end of the day, we were tired, but we had survived. The worst had come, and we were still standing.

#### **DAYS 3-14: The long haul**

While disaster plans specified full occupancy of disaster sites for up to 30 days, lack of space quickly changed that to three days. Having a large number of people crammed into the two small buildings with a total of three working toilets bordered on the inhumane.

When it became apparent that these temporary digs might be used for an extended period of time, management and IS began to move the refugees to other local branches. IS gave up one of its two disaster-support sites and crammed administrators into an extra room in yet another branch. Network engineers were eventually told to work from home. By the middle of the first week, essential personnel were given limited access to the building to pick up supplies.

#### **DAY 15: The return**

Qualified structural engineers, after a lot of expensive drilling, pulling, pounding and measuring pronounced the building safe. So to ease the transition back into our building, we had a phased return. This worked out well, bringing back one or two departments a day. This gave us time to solve the minor issues that came up with each department's return instead of having a great day of chaos.

Most glitches occurred when departments that had been split up to multiple locations (and thus multiple servers and databases) needed to share data and applications again. Different copies of databases had to be merged, conflicts fixed, etc.

Despite the minor issues, everyone was glad to be back home. After two weeks of cramped, overcrowded conditions, for most users their old cubes never looked so good, and they cheerfully waited for us to fix these minor issues.

#### **The moral of the story**

Overall, the biggest lesson for the bank's powers-that-be was that we need more space. It is hard to know ahead of time how cramped conditions may be, but a detailed site map can help. In IS, we learned that we have to make sure our servers and networks can handle the full number of users. We know too that we were lucky we didn't need to implement the "large pile of rubble" scenario.

I am working on a new disaster plan for our database servers for that scenario, and we are going to keep copies of important documentation in locked fireproof safes at the disaster sites. We have also begun research on a large, multisite storage-area network.

I have two final pieces of advice for disaster planners. First, you can't think of everything. Some tasks will take longer than expected, people and departments won't have their bases covered or things will just go wrong. Murphy's Law is stronger than gravity. Relax and cope with it. At worst you will get great story material for your grandchildren or your next job interview.

Second, again, no matter how well you plan and how many details you cover, it's going to be expensive. This is life. Get a bean counter to set up a special disaster account and if you need something — monitors, tables, a large tent or sunscreen — don't be afraid to buy it. Your primary thought should be survival, then economy. Keep records and receipts to sort things out later. We did this and it made life a lot easier. Hopefully you won't have to go through what we did, but if you ever do I hope the advice here can prevent future headaches.

*The author can be reached at [mlane@myrealbox.com](mailto:mlane@myrealbox.com).*

## THE NETWORK

- The bank does not keep customer account information on-site; that is stored on mainframes of a vendor company, which we shall call the X-Company.
- All applications and support data needed to download account information, access it and print monthly statements are stored locally.
- Internal data, such as employee information, security, sales and marketing data and applications are kept on bank systems on-site.
- The headquarter systems are a mixed network of Novell and NT servers, and even a Unix box. There are also one Oracle, and several Microsoft, Sybase and other database applications.
- Headquarters also houses the Domain Name System and Warehouse Information Network Standards servers, one of four software gateways used by all branches to connect to the X-Company, and was one of two locations that had a physical frame relay connection to the X-Company.

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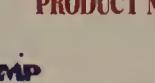
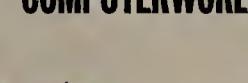
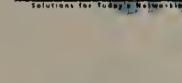
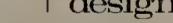
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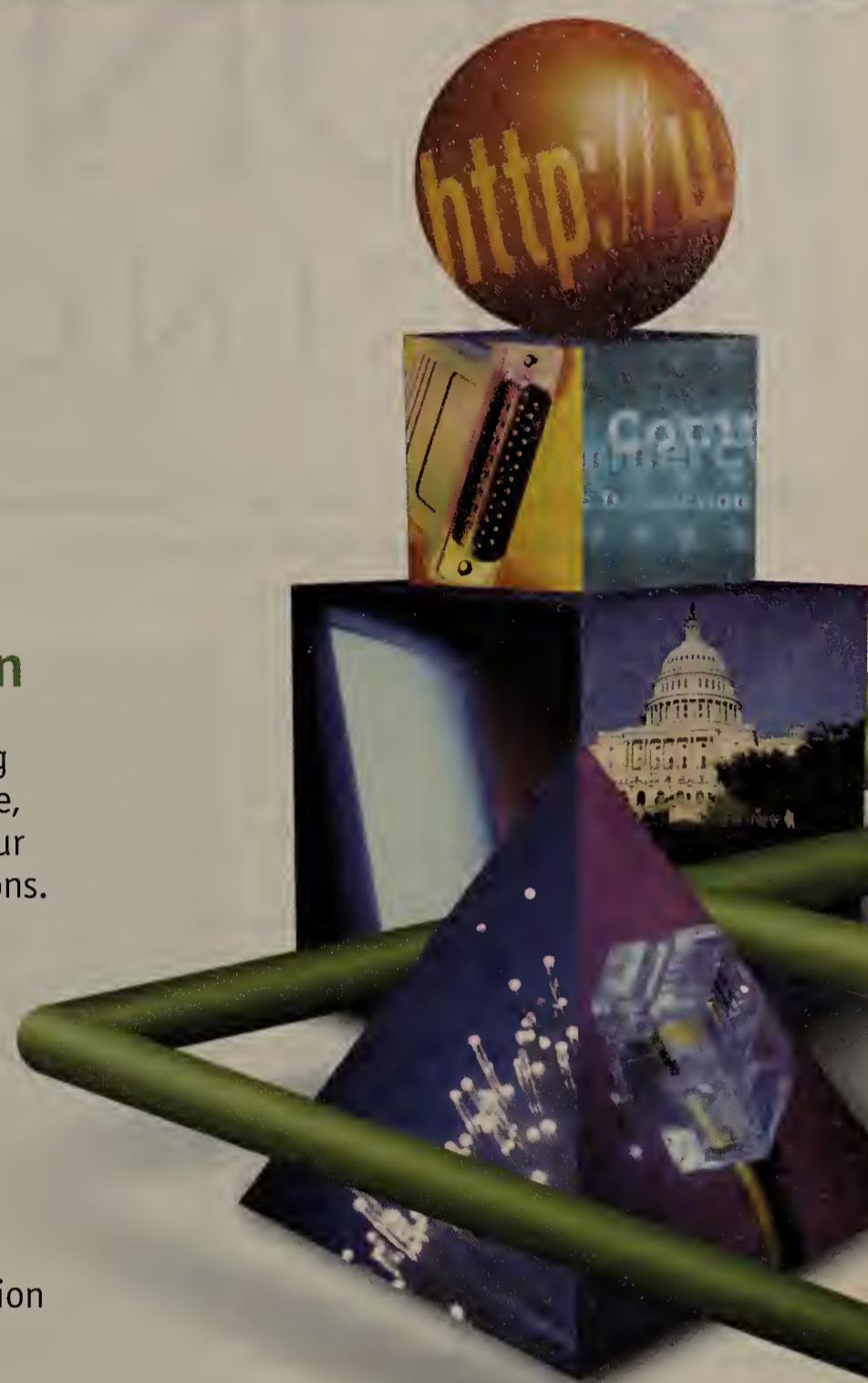


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NW9

# ISDN PRI

## PRICING



**Primary Rate Interface service is booming for PBXs and dial-up Internet access.**

BY KEVIN DUNETZ

Some people may say that ISDN is dead, but that's news to the millions who rely on ISDN Primary Rate Interface service for connecting PBXs and dial-up modem banks to the public network.

While it's true that sales of ISDN Basic Rate Interface service aren't as high as those of competing broadband technologies, PRI sales are going through the roof.

As a PBX platform, PRIs offer more flexibility than traditional analog trunks. PRIs are good for ISPs because they let users connect via 56K bit/sec modems or 128K bit/sec ISDN BRI service.

A PRI offers 23 B channels for voice, video and data traffic via a 1.544M bit/sec T-1 line. The 24th channel, the D channel, is used for signaling. When you combine multiple PRIs, you only need to use one signaling channel for the group of lines, freeing at least one additional B channel for regular traffic. Because of

their digital nature, PRIs are equally good at handling voice or data traffic. What's more, PRI will certainly be the access method of choice for connecting voice-over-IP traffic to the public switched telephone network.

### Breaking down the costs

The cost of PRI service comprises four components: the T-1 line; the B and D channel arrangements; the trunking arrangements; and special features.

The T-1 charge covers the cost to connect your network to the carrier's switch. In the case of some PRI service providers, you can actually collocate your equipment in the same building with the switch, thus eliminating this charge.

The channel arrangement refers to the way in which you multiplex the B and D channels over a T-1, such as 23B + D, 24B and so on. The trunking element covers services such as Direct Inward Dialing, which lets you

### Comparing costs

Here's what you can expect to pay per month for two types of ISDN service: ISP PRI inward dialing lowest cost, and PBX PRI inward and outward dialing for 1,000 phone numbers and 23 trunks. In some cases, carriers may waive installation charges.

	ISP PRI	PBX PRI		
	Month-to-month contract	Multiyear contract	Month-to-month contract	Multiyear contract
<b>NEW YORK</b>				
<b>Verizon</b>	\$1,153	\$1,083	\$1,254	\$1,184
<b>CLEC</b>	\$495	\$495	\$600	\$600
<b>ATLANTA</b>				
<b>BellSouth</b>	\$1,210	\$1,040	\$2,464	\$2,464
<b>CLEC</b>	\$1,195	\$1,195	\$1,195	\$1,195
<b>CHICAGO</b>				
<b>Ameritech</b>	\$789	\$543	\$889	\$543
<b>CLEC</b>	\$516	\$516	\$516	\$516
<b>SAN FRANCISCO</b>				
<b>SBC</b>	\$618	Not applicable	\$1,063	Not applicable
<b>CLEC</b>	\$420	\$390	\$1,200	\$1,000

SOURCE: TELCO EXCHANGE

give each employee his own direct-dial phone number.

Finally, the special features include options such as calling line ID. When you combine all these elements, you arrive at the true cost of PRI service.

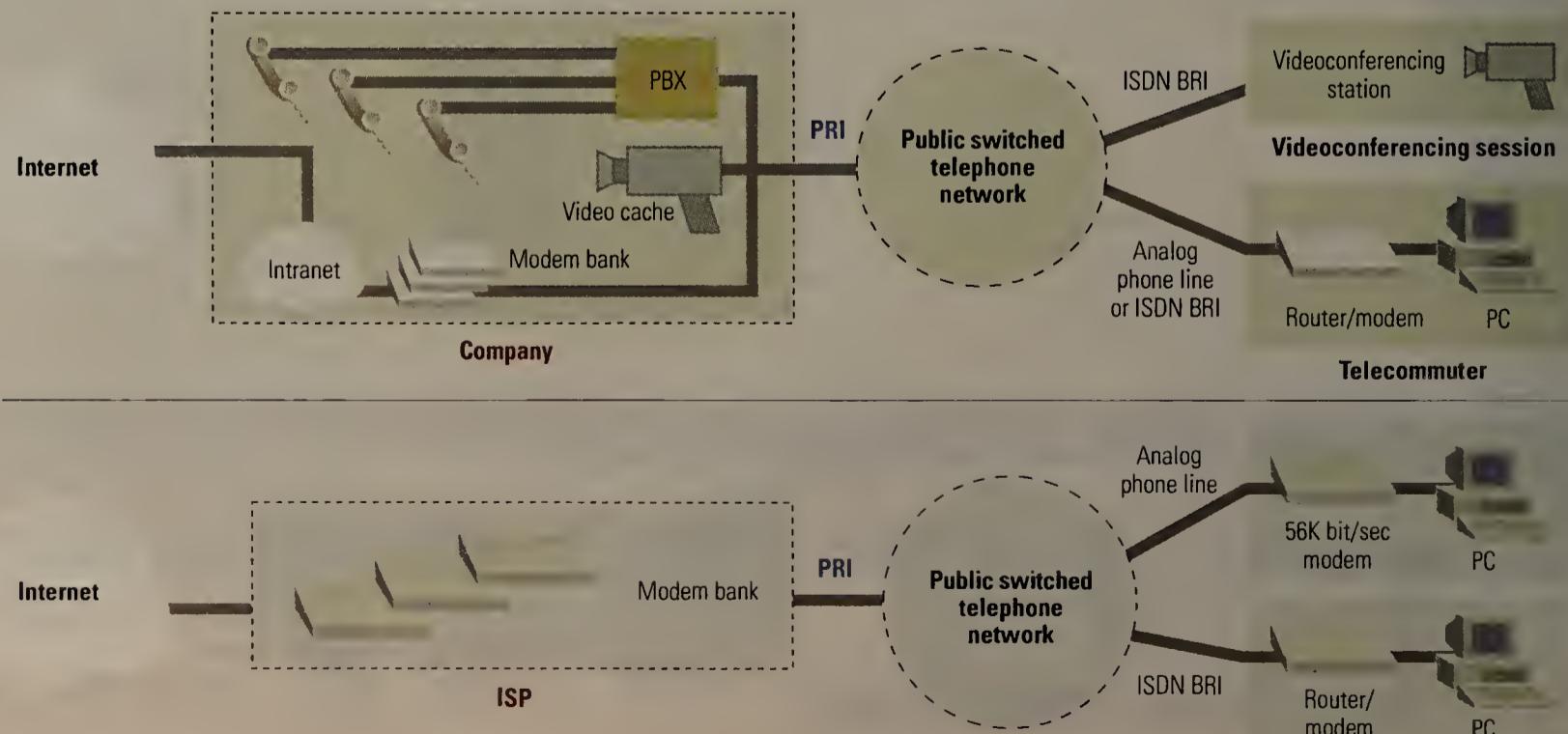
### Where to buy

One of the most difficult aspects

of buying PRI service is determining if a particular carrier has the service in your area. There's no question that regional Bell operating companies provide the greatest coverage of any PRI provider. Interexchange carriers such as AT&T, WorldCom and Sprint also offer PRIs, but these circuits are typically sold for access to long-

### Behind the scenes

In the top diagram, a company is using PRI to connect its PBX to the public switched telephone network, and to support telecommuters and videoconferencing sessions. In the bottom example, an ISP uses the same PRI line to support 56K bit/sec analog modem and ISDN users.



distance service.

Competitive local exchange carriers (CLEC) are another source for PRI in larger metropolitan areas of the country — what some people refer to as the NFL cities. A search on the carrier's Web site or a telecom portal such as [www.telcoexchange.com](http://www.telcoexchange.com) will tell you if the CLEC serves your area, but then you'll need to call the carrier to confirm that it can serve your address. If you have to deploy PRI across the U.S., you should choose a CLEC — such as Focal, Telgent and Winstar — that offers national service.

Regardless of what type of carrier you choose, be prepared for extensive installation delays in areas with heavy demand. It's common for your order to sit in a reservation queue until new facilities become available.

#### What it costs

PRI pricing varies depending on which carrier you choose and the configuration of your service. As you might expect, the RBOCs are generally the most expensive and the CLECs tend to offer more competitive prices to win your business. A dial-up modem PRI configuration is the least expensive and generally costs between \$300 and \$1,000 depending on the region. A more full-featured PBX PRI configuration costs about \$1,000 to \$2,000. See the graphic on page 48 for sample pricing for PRI deployment in various cities.

Thanks to approved tariffs and lack of competition, RBOCs haven't had to lower their prices much. However, some carriers negotiate discounts based on high volume orders or a combination of long-term contracts and volume commitment. Carriers are also likely to waive installation charges in competitive markets. As competition intensifies, you can expect carriers to reduce their monthly charges as well.

No matter what you hear about ISDN, it's not going away. PRIs are the foundation of today's worldwide switched digital network, and deployment is taking off. Every time another million people get on the Internet,

ISPs have to order another 3,000 PRIs. Some ISPs order circuits in quantities of 100 at a time to keep up with customer demand for dial-up services.

As for PBXs, most corporations are moving away from analog trunks to PRI configurations. PRIs may seem

expensive when you compare them with analog trunks, which cost between \$30 and \$80 per month. However, when you factor in the flexibility, ease of maintenance and advanced features of PRI, it's hard not to justify moving to a voice/data/video telecom

infrastructure based on PRI service.

*Dinetz is vice president of engineering with Telco Exchange ([www.telcoexchange.com](http://www.telcoexchange.com)), an online marketplace for high-bandwidth communications services. He can be reached at [kevin@telcoexchange.com](mailto:kevin@telcoexchange.com).*

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**K**eeping track of multiple passwords for different systems is a pain. In fact, it ranks near the top of the list for most help-desk-related calls. Add to the mix myriad Web sites and applications requiring another set of credentials, and you're just compounding the misery. Novell has updated its Single Sign-on (NSSO) product and partnered with Passlogix to help ease the pain of application access for end users and administrators.

For users, NSSO eliminates the hassles of remembering multiple passwords and reduces the security risks associated with writing them down. For network administrators and help desk personnel, NSSO will reduce the number of calls from users who have forgotten their passwords.

NSSO sits on the client workstation watching for applications or specific Web sites requiring authentication. It then fills in the required information by retrieving the correct password from the user's Novell Directory Services (NDS) account. This version does a much better job of handling the whole password modification process than previous versions and provides additional controls for the administrator to govern how and when to make the appropriate changes. It also provides access to your password information even when you're not connected to the central server.

NSSO Version 2.0 ships with a product called v-GO from Passlogix, which provides all the necessary features for managing Web and application passwords. NSSO Version 1.0 had a limited number of applications that it supported natively, including Lotus Notes, Entrust security applications and PeopleSoft applications. Support for any other application required additional user programming. The basic version of v-GO adds support for up to five Web logons and an unlimited number of Windows applications.

A new NDS-aware screen saver eliminates one more user name/password pair for the end user to remember and will make many security managers happy. While Windows NT server and workstation employ a user's logon credentials for the screen saver utility, Windows 95 and 98 use a separate pair. NSSO modifies the display properties dialog box for screen saver password configuration to reflect this change.

#### Installation and configuration

For this review we ranked installation and configuration at a higher level than normal because these processes are key to the overall oper-

# Novell upgrades Single Sign-on

**Latest version adds new features for managing multiple user names and passwords.**

BY PAUL FERRILL

ation of the product. Installing NSSO requires that you load software on the server and the client. The server installation process installs the password SecretStore repository for keeping track of all user passwords and makes a required extension to the NDS schema. Both the server and client rely on Novell International Cryptographic Infrastructure (NICI) components for passing secrets between the server and client. Be aware that you will have to shut down and restart the server twice to complete the installation process. The server components also work on an NT or Windows 2000 server running Novell's NDS eDirectory for Windows.

The client software comprises NICI, the NSSO client and v-GO for NSSO. A full version of v-GO is available for an additional cost, adding unlimited sign-on to most Web sites and Web-based applications, unlimited Windows applications, full terminal emulator support, disconnected access to stored logon data, and additional administrative functions. Licensing the full v-GO version consists of adding an object to the NDS tree using ConsoleOne and modifying the properties to enable full v-GO support.

When testing the installation process we found one hitch that you'll want to be aware of. If your network includes older workstations that do not have true Pentium processors, the NICI components may not function properly. We tested the software on an older system with an IBM/Cyrix 6X86 processor, and the NICI VxD driver crashed. Other

workstations based on Intel Pentium chips or newer AMD processors worked fine with NSSO.

For sites with ZENworks for desktops, Novell includes a sample ZENworks .AOT file for distributed installation of the client software. Otherwise you'll have to do the installation manually or use some other software distribution tool. Overall the process was relatively painless with the exception of troubleshooting the failure on the older workstation.

#### Administration

NSSO has several features for the administrator to implement specific password policies. If you want to use most of the advanced administration features, such as establishing password policies, allowing disconnected logons and enabling terminal emulator support, you'll have to license the

full version of v-GO. All administration takes place using Novell's ConsoleOne utility. ConsoleOne can be installed on a single workstation or to the server for easy access. An NSSO snap-in for ConsoleOne provides the added functionality needed to manage the different settings.

In order to define a new application you must be able to run v-GO for NSSO and the application you want to define from the administrative workstation. The process for defining a new application consists of running that application and then adding the information to the master application list.

Novell provides an .ADM file for implementing specific policies related to the screen saver. The .ADM file is compatible with ZENworks extensible policies or Microsoft's policy management. Configurable parameters let you enable/disable whether users can select a screen saver, access the screen saver's Settings and Preview buttons, and set or modify the screen saver's Wait timeout value.

Other administrative features include the ability to enable or disable v-GO for all users in a container, force the removal of local logon data at system shutdown and control the basic appearance of the different v-GO dialog screens. All these administrative features worked as advertised.

#### Ease of use

From the end user's perspective, NSSO is exceptionally easy to use. Accessing a new application or Web site requiring logon for the first time forces v-GO to remember those credentials and store them in the SecretStore. The next time the user goes back to the same Web site or application, v-GO takes care of the logon. The software even keeps track when a password change is requested, changes the password in the Secret-

## NetResults

### Novell Single Sign-on 2.0

**RATING:** 3.65 **COMPANY:** Novell, (801) 861-7000, [www.novell.com](http://www.novell.com)  
**COST:** \$29 per user for new installation, \$15.40 per user for upgrade, \$49 per user for full NSSO/v-GO bundle. **PROS:** Simplifies password management, painless end-user experience, multiple options for administrators. **CONS:** Client installation can be tedious without a software distribution tool, cryptographic component doesn't work on older, non-Intel workstations.

	Administration 35%	Ease of use 30%	Installation & configuration 20%	Documentation 15%	Total score
NSSO	4.0	4.0	3.0	3.0	3.65

#### NEW SCORING FOR REVIEWS

As of Jan. 8, *Network World* has switched its scoring scale. We will now score products on a scale of 1 to 5, rather than 1 to 10.

We believe that scoring on a 1 to 5 range would be more easily understood than previous methods. As it relates to school grades, the new scoring would establish 1=D, 2=C, 3=B, 4=A. A score of 5 would be the exceptional score — a scholastic equivalent would be scoring an A in an honors class.

Store and responds to the change dialog from the application. One note of interest — v-GO requires either Internet Explorer Version 4.X or 5.1. It does not work with Internet Explorer 5.0.

v-GO uses a cache on the local workstation to store an encrypted

version of the SecretStore information. This lets v-GO work in a disconnected scenario for mobile users with laptops not directly connected to the network. Synchronization takes place when the machine is started while connected to the NDS network, when

logon data is updated in the local store and when v-GO is shut down. Local access is granted when the user logs on to Windows.

For the administrator, the ConsoleOne program provides a clean interface for changing the various

settings and performing common tasks such as defining new applications to be automatically recognized by NSSO. While the standard v-GO interface will detect and add a new application on the fly, an administrator-defined process will streamline the experience requiring that only the user name and password be entered.

Novell's Single Sign-on product answers the cry for a user password management utility. While you're not required to have a Novell NetWare server, the software relies on NDS and the client software to log on to an NDS tree. For non-Novell shops it might be tough to justify the time and expense of adding an NDS server just for the Single Sign-on benefits. Novell customers should see a definite improvement for their users and a reduction in the number of password-related help desk calls.

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*Ferrill is a freelance writer in Lancaster, Calif. He's been using and writing about Novell products since 1987. He can be reached at pferrill@fwb.gulf.net.*

### How We Did It

We installed Novell Single Sign-on (NSSO) software on a network consisting of one NetWare 5.1 server running on a Compaq ProLiant 5500R with dual 550 Xeon processors and 512M bytes of memory. The NetWare server had one 9G-byte disk with a single SYS volume and a second 9G-byte disk split into four separate volumes. The network also had a Windows NT 4.0 server running on an identical Compaq ProLiant system.

Our client systems included a generic Pentium 400-MHz machine with 128M bytes of memory running Windows 98. A second client was an older machine with an IBM/Cyrix P200 processor that is not 100% Pentium compatible. We installed the NSSO client software to both machines along with the latest NetWare client from Novell.

To measure the difficulty of installing and configuring the product, we selected two different workstations to test the software. Once we had the software installed, we then attempted to log on to several custom applications and Web sites to test the password management features. To gauge the ease of use we manually set passwords to expire and then attempted to log on to sites with which we had previously established credentials. From an administration perspective we looked at the various options that could be changed for individual users and groups.

**S**mart network interface cards that off-load network transactions from server CPUs are drawing interest as vendors claim that giving servers more power is as simple as swapping your NIC.

We tested this performance boosting theory by taking a look at one of these smart cards from Alacritech.

To measure the gains the Alacritech smart card yields, we ran our standard server performance tests with and without the Alacritech NIC (see "How We Did It," [www.nwfusion.com](http://www.nwfusion.com), DocFinder: 2522). There was an improvement of between 2.5% and 16% when the Alacritech four-port NIC was stacked up against four Intel Pro100+ NICs. Not a bad improvement, but whether the improvement is worth the extra money — the Alacritech cards cost twice as much as the Intel cards that came with our server — depends on how you use your server and how badly you need better performance.

The biggest performance gain occurred with large file server transfers; while there was virtually no gain when we tested lots of small, database transactions.

The Alacritech NIC comes in two- or four-port configurations — the Alacritech 100x2 and 100x4, respectively. We tested the Alacritech 100x4. Both products support 10M or 100M bit/sec Ethernet in half- or full-duplex mode. At the time of testing, the Alacritech NICs supported Windows NT, with Windows 2000 and Linux drivers in the works.

The Alacritech NIC implements TCP in hardware on an Application Specific Integrated Circuit the company calls an Internet Protocol Processor (IPP). This IPP sends a processed TCP stream directly to the server RAM, reducing the amount of work handled by the server's processor.

Because the code to implement TCP is complicated, Alacritech reduced the code to handle only TCP sessions once they were set up. The server's CPU

## NetResults

### Alacritech 100x4 Smart Card

**RATING: 4.0** **COMPANY:** Alacritech, (408) 287-9997, [www.alacritech.com](http://www.alacritech.com) **COST:** \$599 **PROS:** Some performance benefits, easy to use. **CONS:** Not useful for database servers, no NIC teaming feature.

	Performance 30%	Features 25%	Management 20%	Installation 15%	Documentation 10%	Total score
Alacritech 100x4 Smart Card	3.5	4.0	4.0	5.0	4.0	4.0

#### NEW SCORING FOR REVIEWS

As of Jan. 8, *Network World* has switched its scoring scale. We will now score products on a scale of 1 to 5, rather than 1 to 10.

We believe that scoring on a 1 to 5 range would be more easily understood than previous methods. As it relates to school grades, the new scoring would establish **1=D, 2=C, 3=B, 4=A**. A score of 5 would be the exceptional score — a scholastic equivalent would be scoring an A in an honors class.

# Why pay more for a smart NIC?

### Alacritech's smart cards answer only some performance woes.

BY JOHN BASS,  
NETWORK WORLD GLOBAL TEST ALLIANCE

handles all other TCP processing, including TCP session setup and teardown, timeouts and error conditions. Alacritech justifies the smart card not off-loading all TCP processes by noting the TCP exceptions make up as little as 5% of network traffic.

The Alacritech NIC does nothing to help User Datagram Protocol (UDP) or any other non-TCP transaction performance. For example, the Alacritech card won't help your server with most streaming video, multicast or voice-over-IP applications.

Nonetheless, Alacritech claims this architecture improves server performance by significantly reducing the number of CPU interrupts.

#### Performance results

Although most of our performance testing showed little or no improvement in server performance with the addition of the smart NIC, a couple of our tests — those that simulate large file server transactions — did show a significant performance gain. If your server operates under the conditions represented by these

tests, the additional cost of the Alacritech may be justified.

The network file read test showed the largest improvement in performance, with a 16% increase with a single-CPU server and a 14% increase with a four-CPU server. This degree of performance increase would be seen in server applications where large files are shared between many users. We checked NT's performance monitor to see the difference in CPU utilization on the single-CPU server and the four-CPU server. We saw about 70% less CPU utilization with the Alacritech than with the Intel for both server CPU configurations.

Our random file read/write test showed a 9% increase with a single CPU server and a 4% increase with a four-way server. Our random read/write test applies in real world situations when you have a database server with large transactions and minimal CPU utilization per transaction. Our sequential file read/write test showed about a 3% increase in performance for the single- and four-processor server. Our sequential read/write test applies in real world situations when you are supporting typical file server or Web server transactions. Note the decrease in performance gain as the number of server CPUs increases. This shows that as long as the NIC is not pegged, an increase in CPU horsepower can offset the Alacritech performance gains.

Our database read test showed no noticeable difference in performance. In environments where lots of small database transactions and large CPU-hogging transactions appear on your server at the same time, the Alacritech may not be much help. This is most likely due to the large number of TCP sessions being set up and torn down.

#### More points to consider

Alacritech provides features needed for a server NIC, including speed and duplex configuration controls, speed and duplex autonegotiation, monitoring instrumentation, diagnostics and port teaming.

The management features for the Alacritech NIC include a number of NT performance monitor objects to determine if the NIC is working properly. There is also a set of NIC diagnostics utilities to troubleshoot NIC hardware problems.

Installation couldn't be easier. Go to the NT network control panel, add the adapter driver from the CD-ROM provided with the NIC, and reboot. After reboot, set the speed and duplex settings in the adapter properties box and then set the IP address in the Alacritech TCP/IP off-load driver in the protocols properties box. Reboot again and you're ready to go. The Alacritech drivers coexist with the Intel drivers without any problems.

The documentation provided with the NIC is done well. The company even provides a methodology to determine if the NIC is giving your server a performance boost.

The Alacritech costs twice as much as the Intel NICs per port. Another \$70 per port for the potential of a 15% performance boost may be money well spent. But be wary that the Alacritech cards don't produce the same price/performance gains in all server environments.

*Bass is the technical director of Centennial Networking Labs (CNL) at North Carolina State University ([www.cnl.ncsu.edu](http://www.cnl.ncsu.edu)). CNL tests networking equipment and network-attached devices for interoperability and performance, and specializes in test automation. He can be reached at [john\\_bass@ncsu.edu](mailto:john_bass@ncsu.edu).*



*Bass is a member of the NetworkWorld Global Test Alliance, a cooperative of premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to [www.nwfusion.com/alliance](http://www.nwfusion.com/alliance).*



# Management Strategies

**Career Development, Project Management, Business Justification**

## A plea for civility

**An IT manager challenges his peers to change their attitudes to improve relations with end users.**

BY DAVE SHIPMAN

Over the years, I've heard a lot of complaints about IT workers' attitudes. If you put them all together, the message would be something like this: "It's that certain air IT people give off when you ask them a question. It's like we're pestering them, wasting their time, putting them out, distracting them from their real job. What are they thinking? We are their real job! Why do they act like we serve them?"

Throughout my IT career, I've been exposed to a full spectrum of behavior. Although I remember a few good examples, what pops into mind most often are those occasions when a bad attitude surfaced. I've been on the receiving end, as well as the one dishing it out, I'm sad to say. It wasn't until I experienced some less-than-helpful attitudes from IT groups outside my company that I began to see how I might have treated others in a similar way.

I recognized in myself a lot of the tendencies of those other groups I had to deal with. This was very humbling. I suspect I can speak for other IT folks: We certainly didn't start off this way; we were really nice people once upon a time. We simply became worn down and gave in to the constant barrage of "stupid user tricks" and obnoxious jerks who make the rest of the user community look bad.

We have to ask ourselves whether we are in control of our attitudes on the job. If we're not in control, how are we going to take responsibility to correct the bad perception our end users have developed of IT?

Most of the causes of a bad attitude can be traced to a boss who isn't able to manage sources of discontent for his staff. Moreover, employees pick up their managers' views. If we're showing private contempt, they will too. However, if managers can demonstrate calm, thoughtful handling of abusive users, their staff will learn that skill much more quickly.

Here are a few reasons IT professionals occasionally get bad reputations among the end users they serve and ways managers can improve relations.

### Lack of talent management

Levels of talent within areas of IT need to be managed properly. Moreover, this must be done using a consistent, intuitive terminology. For example, you might use the following scale:



- Newbie — never heard of the technology.
- Novice — knows a little about it, perhaps just enough to be dangerous.
- Proficient — past the danger point.
- Expert — can teach others.

### Priorities in flux

Let's separate job functions according to interruption levels. For example, the help desk staff should not be put into projects that require extended concentration spans. Their job is to be constantly interrupted by users during the day to answer questions, provide quick support and first-level diagnosis. Think of the frustration that will result if the help desk guy has to be pulled off a project every 15 to 30 minutes. This frustration will surface directly against the customer (user), the managers and, ultimately, backlash on IT in general.

### Lack of definition

When a user or manager comes to the IT department with a project request but fails to thoroughly define it, we should help them. But rather than define the project for them, we need to show them how to do it on their own.

### Unrealistic expectations

When we give an employee a task with unrealistic requirements and not give them a chance to provide feedback, we can expect problems. Keep an open

line of communication and be ready to adjust your own expectations.

### Performance monitoring

Don't monitor help desk trouble ticket turnaround time, or you'll be emphasizing quantity over quality. Instead, we should monitor customer satisfaction.

### Selfishness

Let's not deploy the latest tech toys because we selfishly want to work with them. Focus on customer satisfaction and education. If those aren't the top priority, the cool stuff might be done first. Then there's a last-minute push to complete the boring projects or requests. This results in shoddy work, and end users get the feeling that they're just in the way. Having a good attitude will improve our relations with end users and departmental managers, and will ultimately give us more job satisfaction. Let's learn to educate our users rather than reject their requests out of hand. Another goal is to plan ahead while staying on top of the daily operations.

Above all, let's resolve in 2001 to make sure that IT enables others in the company to do their jobs and to serve and advise.

*Shipman is the IT manager in Concord, Mass., for a division of Schlumberger, a large multinational services company. He can be reached at des@slb.com, but only if you're polite.*

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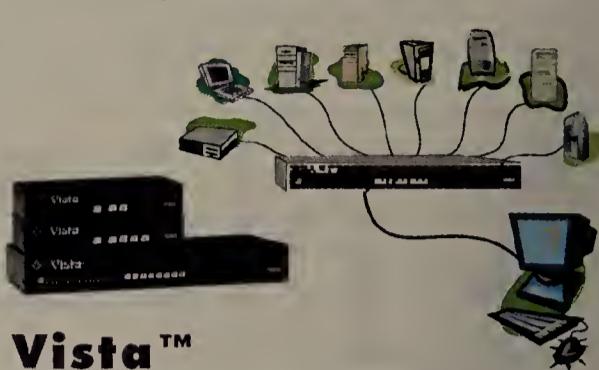
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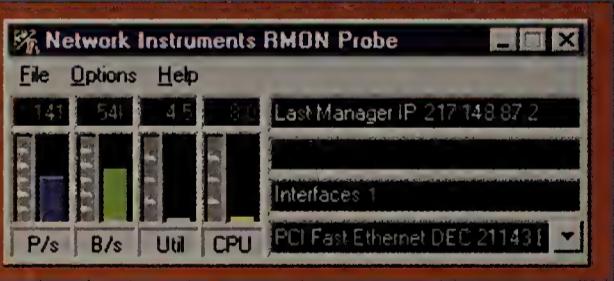
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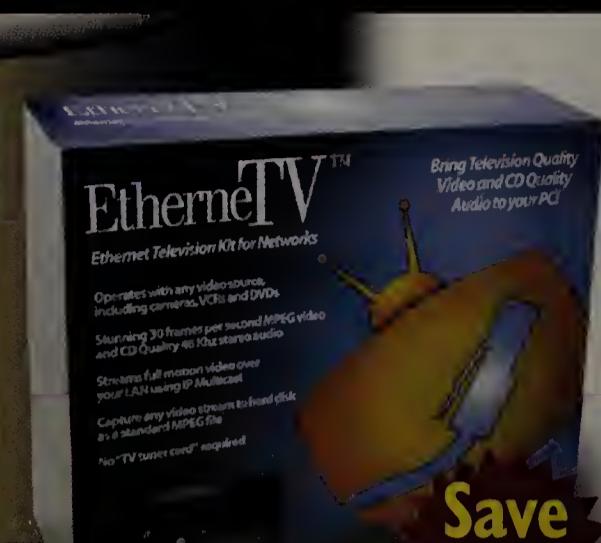
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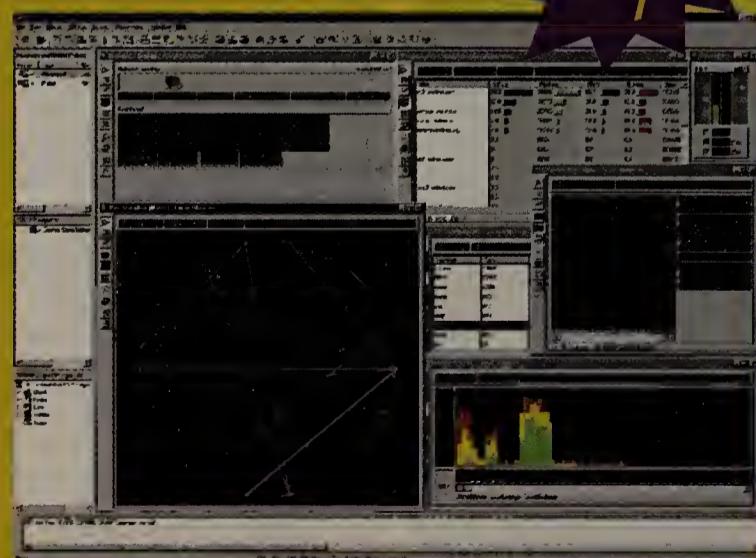


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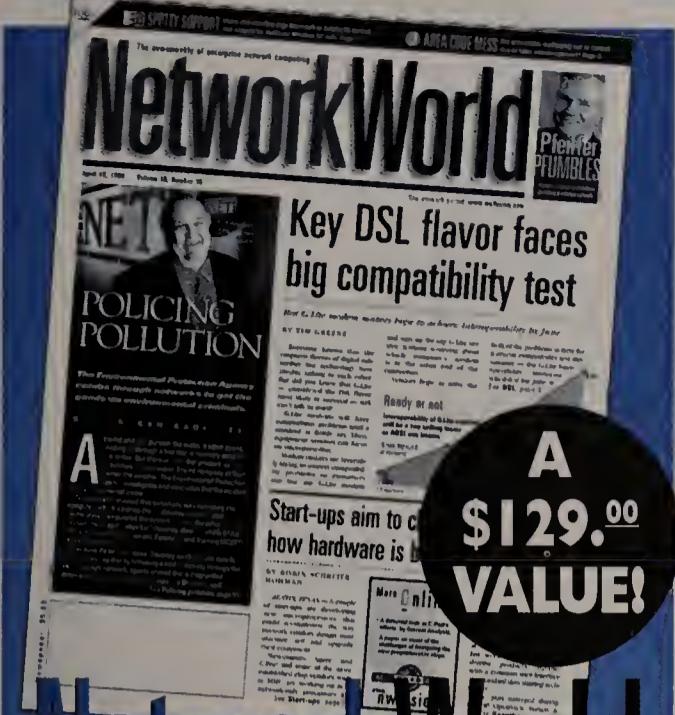
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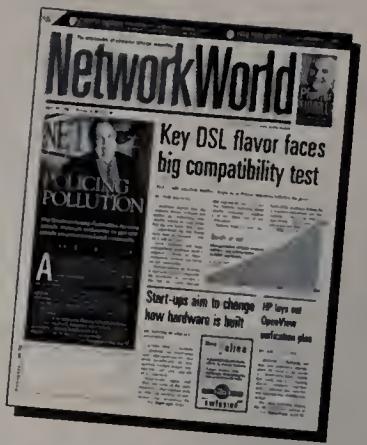
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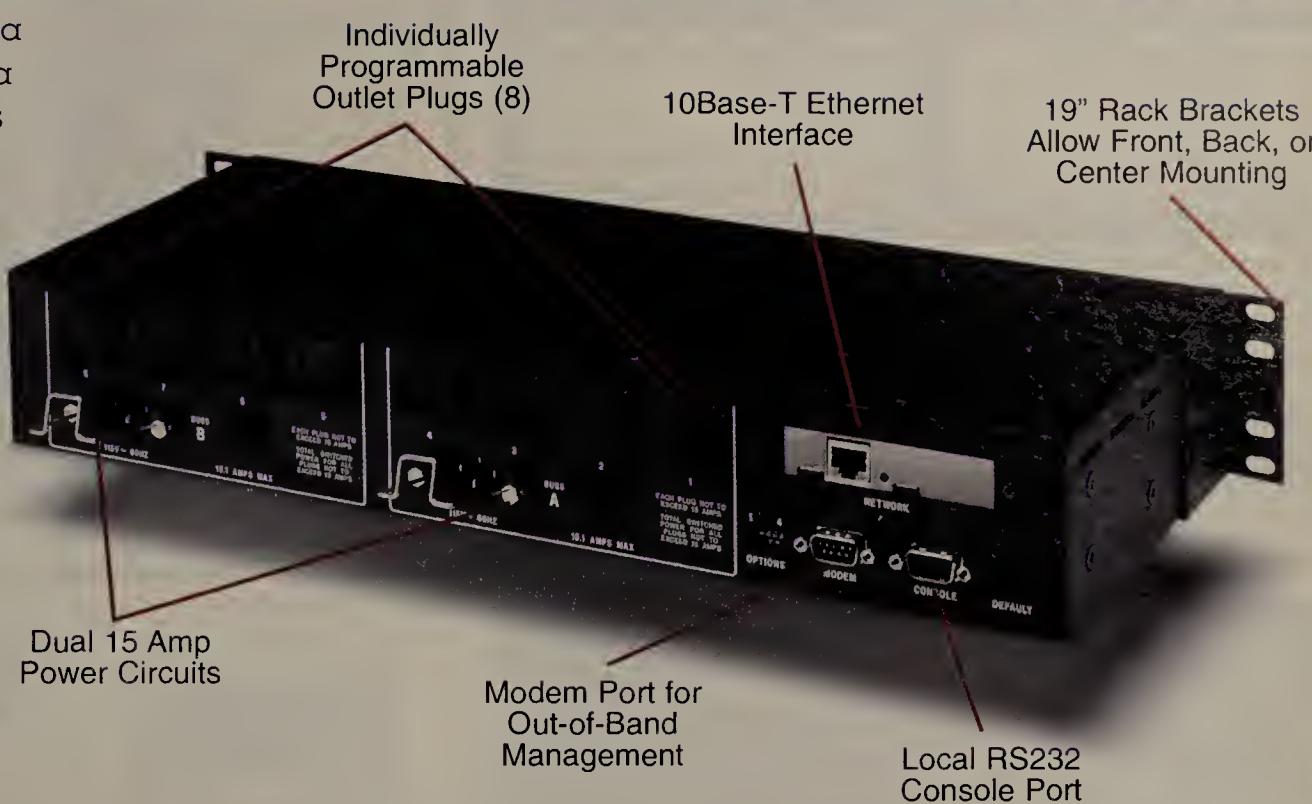
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Sr Systems Administrator. Monitor sys capacity & tuning; recommend h/w & s/w upgrades &/or additions; provide operational & maintenance support for LAN & server environments by assessing, evaluating, & recommending appropriate server tech; provide jr staff guidance in executing sys admin; resp. for overall sys security; set up & maintain all server h/w & s/w; admin Open VMS, Unix, NT, Pathworks, & e-mail; & handle trouble shooting for h/w, s/w, network, & Internet issues. Req: BS, CompSci, InfoSci, or related, & 5 yrs exp supporting networked server environment & w/4 of the following in a sys admin capacity: Novell Netware, DEC (Compaq) Open VMS, DCL, HP-Unix, Windows NT, TCP/IP, DECnet, LAT, Pathworks, & Netscape server communication products; & 2 yrs exp in sys admin coordinating major s/w upgrades. Send resume to: Dan Rogers HR Manager, PPD Development, 3900 Paramount Pkwy, Morrisville, NC 27560, or call (919)462-4310.

Programmer/Analyst (Multiple Positions) wanted by investment banking firm in Greenwich, CT to analyze, design, develop, code, test, implement, enhance and maintain financial systems applications, including proprietary data systems, utilizing Windows NT, C/C++, UNIX, Shell, Perl and Java scripts and Sybase in a client/server environment. Responsible for analyzing and implementing user requirements utilizing knowledge of complex financial derivative and fixed income instruments, including options, FX forwards and swaps. Provide high-quality production support, including development of sophisticated queries and stored procedures. Must have a Bachelor's degree in Computer Science or Electrical Engineering and two years of experience in the job offered (B.S. and five years experience may be substituted for M.S. degree). 50% travel to customer locations within the United States required. Salary: \$64,000 per year, 8 am to 5 pm, 40 hours per week, M-F. Apply in person or send two resumes to: Georgia Department of Labor, Gwinnett, Job Order # GA 6944536, 1535 Atkinson Road, Lawrenceville, GA 30043-5601 or the nearest Department of Labor Field Service Office.

SENIOR SOFTWARE ENGINEER to provide on site consultancy for the complete business software system life cycle design and development from conception to implementation including analysis, testing, system security, documentation, user support and system enhancement; analyze user requirements for hi- and lo- level design specifications; skills used include Visual Basic, COBOL, CICS, Oracle, DB2, MVS/ESA, OS2, UNIX and Windows on mainframes. Require: Masters in Computer Science/Electronics Engineering and three years experience. Salary: \$72,800 per year, 8 am to 5 pm, M-F. Apply with resume to: Business Manager, Royal Offering, Inc., 8491 Hospital Drive, Suite 330, Douglasville, GA 30134. FAX: 678-443-0730. EOE.

PDM Implementation Consultant to work under the close supervision and continued monitoring of the Group Leader, will perform technical and consulting activities including system design and implementation. Will assist in facilitating customers' implementation activities in the area of foundation building, customer education and education planning, and project planning and execution. Will execute product implementation tasks, project level implementation strategies, and participate in program activities (C-FIT, Pr/CAP, and others). Will also aid in user learning curve compression, mentor implementation associations, and document methodologies and case studies. Requires a Bachelor's Degree in Computer Science, Electrical Engineering, Mechanical Engineering, Physics, Mathematics, or a closely related field and one (1) year experience in job offered or one (1) year experience in CAD/CAM or PDM consulting OR CAD/CAM or PDM development. Candidate must also possess expertise supporting Product Data Management ("PDM") products. Salary: \$90,100/yr; M-F 9:00-5:00. Submit two (2) copies of resume to: Case Number 20003653, Labor Exchange Office, 19 Staniford Street, 1st Floor, Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

UNIX SYSTEMS ADMINISTRATOR to provide computer consultancy to develop complete project life cycle including user specifications and high and low level design; develop, enhance, maintain and set up client/server systems on multiple UNIX/networked platforms such as IBM RS/6000, HP-UX/PC/NT using graphical user interface, interface architect, AIX Admin, BOSX, computerized trunk and telephone exchange CTM, UNIX shell scripts, C, interfacing with Oracle, Sybase, Informix databases and SCO-UNIX, Uniques, TCP/IP, UUCP, SMTP, Novell Netware, CNA, CNE, graphical analysis using HP-Pervue; maintain data access layer and user interface layer for communication between UNIX servers to databases. Require: M.S. (or equivalent) in Computer Science or Electronics and Communication and two years experience in the job offered (B.S. and five years experience may be substituted for M.S. degree). 50% travel to customer locations within the United States required. Salary: \$64,000 per year, 8 am to 5 pm, 40 hours per week, M-F. Apply in person or send two resumes to: Georgia Department of Labor, Gwinnett, Job Order # GA 6944536, 1535 Atkinson Road, Lawrenceville, GA 30043-5601 or the nearest Department of Labor Field Service Office.

COMPUTER/IT Softpros, Inc. an Atlanta, GA based corp. needs IT professionals in the skills set below:

- Java/EJB/Corba
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- VC++/COM/DCOM/MFC
- Unix/C++/Pro\*C/Pro\*C++/STL/XML
- Oracle 8i/8.0/7.3x, Developer 2000, Designer 2000, PL/SOL
- NT Admin/Engineer
- Sybase/PowerBuilder/Oracle
- Oracle DBA
- Senior Business Analyst (ERP/SAP-R/3 HRM)
- ASP/Internet - E Commerce Applications
- Java/Rational Rose/Integra/VB Script/Java Script
- RPG400, COBOL400, AS400

Travel required. Please mail or fax your resume with salary requirements to: HR, 1 Dunwoody Park, Suite #230, Atlanta, GA 30329 or the nearest Georgia Department of Labor Field Service Office.

Technical Liaison, 40 hours per week, 9:00a.m.-6:00p.m., \$78,500 per year, located in Ft.Lauderdale, FL. requires a High School education and three years experience in the job offered. Must be fluent in Spanish. Develop software, oversee application system enhancements, and maintain systems on IBM mainframes which support Latin American businesses. Manage strategy development to meet evolving business requirements, propose and implement technological solutions, and design benchmarks, analytical tools and work processes. Provide overall leadership in projects related to the integration of new and existing systems, including the implementation of a banking software system for Venezuela. Perform computer programming in languages including Fortran, Assembler, COBOL, CICS, and Basic. Manage budget and provide status report to senior management. Provide technical support to local users and business groups in the Latin American marketplace. Oversee the activities and evaluation of Programmer/Analysts, and manage consultants. Send resume to Dept. Of Labor/Workforce Program Support, PO Box 10869 Tallahassee, FL 32302, Attn: L. Knight, Re: JOFL #2130153.

SOFTWARE ENGINEER Works on request for software support reports, simple game changes, and modifications. Assists in the design of software modules, with clearly defined requirements with the help of more senior software engineers. Participates in the design of test cases for software module changes. Participates in group designs discussions and expected to understand basic design decisions. Duties limited to changes to or the creation of isolated modules or product components that are completely designed with some supervision from more senior software engineers. Requires only minor supervision from more senior software engineers to troubleshoot problems and make repairs in isolated modules or product components. Requires only minor supervision while bringing up the game, performing test cases and systems interrupt. REQUIREMENTS: B.S. in Computer Science, Engineering, or related field plus one year or experience in job offered or related occupation of Programmer and/or Research. HOURS: 40+/wk. RATE OF PAY: \$52,000/yr. SEND RESUME TO: Diane Alexander, Director, Human Resources, GTECH Corporation, 55 Technology Way, West Greenwich, RI 02817. EOE

Software Engineer. 40 hrs/week. 8am-5pm. \$70,000/yr. Design and construct mainframe software applications using sterling key CASE technology. Work with key 4.1 tool components and application development using module action diagrams, screen and report layout and data structure diagrams. Macro functionality and using within the key 4.1 development as well as key data types and data type sets. Analysis, design and implementation of computer programs in MVS, CICS environments using IDMS, KEY, COBOL, JCL, and VSAM. Must be willing to travel and relocate as required. MS or equivalent in Comp. Sci/Info Systems or rel. plus 3 years of exp. In the job offered or related field as a software eng/consulting/prog. A BS/BA in Comp Sci., Info Systems, or related and 5 yrs. or related work experience is considered to be the equivalent of a MS and 3 yrs. of exp. by our company. Several positions available. Must have proof of legal authority to work permanently in the U.S. Applicants may apply in person or by sending 2 resumes to: North Metro, Job Order # GA 6934224; 2943 N. Druid Hills Rd. Atlanta, GA 30329 or the nearest Georgia Department of Labor Field Service Office.

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## Software Engineers

IRIS ASSOCIATES, the creator of Lotus Notes, Lotus Domino and Lotus Domino Designer, seeks to fill a number of Software Engineering positions at various levels of responsibility at our location in Westford, MA. All positions require a BS degree (or equivalent and some require a Masters degree) in Computer Science, Mathematics or other relevant field, together with at least 4 to 7+ years' relevant experience.

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Please mail or fax your resume, indicating Reference Code AIMSP@, to Iris Associates, Attn: Kendra Perry, Human Resources, Five Technology Park Drive, Westford, MA 01886; Fax: 978/692-5001. Email: [Kendra\\_Perry@iris.com](mailto:Kendra_Perry@iris.com). Visit: [www.iris.com](http://www.iris.com).

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Senior System Administrator (TWC Latin America) (Atlanta, GA) Responsible for site, training and installation, testing support plan and all other operational and maintenance responsibilities for Latin Weather System network based on Unix system, NT server, TCP/IP network and related hardware, software, network and data configurations. Evaluate and direct the interconnection of the Latin American Networks with company-wide systems or networks. Responsible for ensuring and coordinating emergency support 24 hours per day, seven days per week. Develop and maintain operational support, backup and recovery procedures and their execution. Key person responsible for Met system additions or modifications and training of Personnel in system administration. Principal contact with Latin Weather System vendors regarding users, system and network support. Must have Bachelor's degree or foreign degree equivalent in Computer Science, Electrical Engineering or related field, & five years experience in the job offered (Senior System Administrator) or five years progressive experience as a Unix System Administrator. Must also have five years experience in TCP/IP network management and two years experience in Windows NT system administration. Experience may have been obtained concurrently. Must have proof of legal authority to work in US. Submit resume to: Director Org Dev., The Weather Channel Latin America. Ref: SrSA, 300 Interstate North Parkway, Atlanta, GA 30339.

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Senior Developer, NY, NY: Provide leadership, problem solving & trouble ticket resolution for existing applications. Use SQL Server to retrieve & store data necessary for the dev/maintenance of various applications. Dev. application code from documented specification using HTML. Build detailed software specs & modify hardware req. from a provided functional specification using Visual Basic and HTML. Follow full system life cycle dev. incl. participation in interactive design & review sessions. Modify programming systems, incl. encoding, testing, debugging, and installing to support application systems using XML & Java. Periodically report status of work completed as directed by project manager. Perform applications software performance tuning & capacity analysis. Requires: B.S. in Technology or related field, 4 yrs irrjor offered for Software Eng., Prog./Analyst, Developer, 4 yrs Visual Basic, 2 yrs SQL Server, 1 yr HTML. EOE. 40hrs/wk + additional hrs for project needs. Salary \$84,000/yr. Send resumes (no calls): HR, RentPort, Inc., 1450 Broadway, Ste 1011, NY, NY 10018.

Sr. Software Developer (Littleton MA) Research design, develop, implement and test computer software in a client/server environment, utilizing OOA, OOD and Forte Tool. Translate application requirements and use cases into problem-domain object oriented work products; identify objects. Develop analysis work products, including scenario/sequence diagrams. Translate, transform and implement design work products into source code. Provide technical support to junior team members as required. Must have Bachelor's Degree in Computer Science, Engineering or Related Field or equivalent; and 5 yrs experience in job offered or 5 yrs progressive experience as a Software Developer. Experience may have been obtained concurrently and must include: (i) 5 yrs experience using OOA and OOD in client/server environment; (ii) 2 years experience using either Smalltalk or C++, and (iii), 1 yr experience using Forte. Must have legal authority to work in the U.S. Send resume to Attn: N. Page, S1 Corporation, P.O. Box 3390 Peachtree Road, Ste 1700, Atlanta, GA 30326-1108.

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Various skills combinations required: Sybase, Oracle, Visual C++, Windows NT etc. Apply with 2 copies of resume to H.R. Department, Grand Water Proofing Co, 316 41st Street, Brooklyn, NY 11232.

**NETWORK ENGR/DEVELOPER** wanted by a company engaged in Healthcare Information Svcs to administer the Network & Develop Applications involving intense programing languages (C, C++). 2 yrs exp required. Bachelor's deg in Commerce or Computer Science or Eng'g. Send 2 resume to G. Cannavale, 95 Madison Ave., Suite 1307, NY 10016.

Queens Borough Public Library is looking to fill the following positions at their work sites at Jamaica, NY:

Software Engineers: Must have exp in using SAP ABAP New Report, PL/SQL & Oracle. Req'd Masters Eng, Comp Sci, Sci w/1yr exp or Bach w/5 yrs exp/dsgn & dvlpt.

Send resumes to Queens Borough Public Library, HR, 69-11 Merrick Blvd, Jamaica, NY 11432

**Software Engineers, Programmer Analysts, Database Analysts** needed by NJ based IT firm. Please apply with 2 copies of your resume to H.R. Department, Advanced Data Solutions, Inc., 666 Plainsboro, #1175, New Jersey 08536.

**Systems Administrator** wanted by Garment Import & Distribution Firm in New York, NY. Must have Bach or equiv in Elec Engg, Comp Sci, Math or Physics & 1 yr s/w exp. Fax resumes to: (212) 967-6027, Attn: Eric So, MIS Director.

**SYSTEMS ANALYST** Investment Management firm seeks Systems Analyst to provide software support and database management for computer-driven trading & accounting systems in a networked Sun/Solaris Unix environment. Duties include software development, maintenance and testing for equities databases, and various reporting programs. Successful applicants must possess Master's degree in Computer Science or Engineering. Salary commensurate with experience. Mail resume to RTC, 600 Route 25A, East Setauket, NY 11733, attn: RM

**Regional Analyst**: Analyze, evaluate, diagnose, correct, define, and complete client data conversion projects. Must have minimum Bachelor's in Accounting or equivalent, two years programming/analysis, and present proof of legal authority for full employment in the U.S. M-F 9am - 5pm, \$62,000/yr. Those interested and qualified send resumes to A.J. Hubbard, Profit Recovery Group, 2300 Windy Ridge Parkway, Suite 100N, Atlanta, GA 30339-8426.

**Senior Software Engineer** wanted by NY, NY Co. involved in the Devlp, Sale of Internet based workforce mgmt. software. Respond to: Mary Pang, Workforce Logistics, Inc., 60 Madison Avenue, Ste 704, NY, NY 10010.

**Principal Consultant** sought by Massachusetts-based Software Development & Consulting Co. for job in Vienna, Virginia. Must have Bachelor's deg in Comp. Sci, Electrical Engg or related field & 3 to 5 yrs exp in application development, including systems analysis & IT consulting. Respond to: HR Dept, Job Code #5247, Cognos Corporation, 67 South Bedford St, Burlington, MA 01803.

Software Engineer wanted by telecommunication s/ware dvlpm't & research co in Bound Brook, NJ. Must have Masters in comp sci, applied computation, computational modeling research or related fields w/ at least 6 mos exp in dsgn, dvlpm & implm'tg C/S & Web applic s/ware w/ Object-Oriented technologies, Java, C++/C, CORBA, Perl, Oracle, Unix. Know in Router/Switch configuration & n/work/telecommunication is reqd. Please send resume to HR Dept, WANDL, Inc, 2121 Route 22 W, Bound Brook, NJ 08805, Fax: 732-868-0014.

Software Engineer needed by IS/IT Professional Consulting Co. in New York, NY. Must have Bachelor's degree plus 5 yrs of exp or Master's degree plus 2 yrs of exp in Comp. Sci., Engg., (any field) req'd. Exp must be post graduation. Respond by resume to: paperady@aol.com or fax resume to 212-248-0600.

Software Engineer wanted by a Telecommunications co. in Newark, New Jersey. Must have a Bachelor's degree in Computer Science, Computer Engineering or related field & 2 years exp. as Software Engineer/Programmer Analyst utilizing Unix, dialogic, natural Microsystems telephony cards and T-1/E-1/R-2. Respond to Net2Phone, Inc, 520 Broad Street, Newark, New Jersey 07102 reference RIRPAT1000.

**Senior Programmer**, Responsible for leading and directing the design, implementation, testing and debugging of software for E-commerce applications on Windows NT and IIS. Responsibilities include programming using Visual Basic, ASP, and SQL, networking software, designing server side applications and using Visual Basic and ASP. Requires Masters degree in Computer Science or Computer Engineering. Send resume to Applied Management Systems, Inc., 36 Park Drive East, Branford, CT 06405 Attn: Human Resources Department, fax (203) 488-3251 or email careers@amsnet.com.

**Programmer**: To design, develop, implement & integrate the company's applications into other software products. Perform quality assurance testing on individual development. Require BS or equivalent in CS or CIS w. 1 yr. experience in programming. Proficiency in Visual Basic, MS SQL Server, and Oracle on Windows NT/UNIX \$60K/yr, 40 hr/week, 8-5. Send resume to AtWork Technologies, Inc. 6410 Atlantic Blvd., Suite 180, Norcross, GA 30071. Fax: 678-268-1501. Email: kajobs@atworktech.com.

**Operations Research Analyst** wanted by technology company in Garden City, New York. Must have a M.S. in Op. Research, Math, Indus. Engg. or Stats. Respond to Generalist, HR Dept., WizCom International, Ltd., 900 Old Country Rd., Garden City, NY 11530, Ref# ORA.

Logos Corp. provides quality language translation and localization solutions to companies from a wide range of industries. We are currently looking for qualified Programmers to work as part of the development team on the company's translation core engine. Must possess a Degree in Computer Science or a related field.

Please forward resume to: Ms. Erika Arbolino, Logos Corporation, 100 Enterprise Drive, Ste. 501, Rockaway, NJ 07866; or fax to: 973-366-7697.

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**DATABASE ADMINISTRATOR**: Oracle server and production; responsibility: maintenance, configuration, tuning, planning, and development w/relational database. Master of Science in Electrical Engineering, Computer Science, or related field w/3 yrs. exp. req. in Database, software development & Windows NT and HP UNIX. Send resume only to ATTN: CW c/o Sandata Inc., 26 Harbor Park Dr., Port Washington, NY 11050.

**Multimedia Director**. Manage web site layout, design, content & advertising using ASP, Javascript, DreamWeaver, BBEDIT, Flash, Photoshop, Freehand & Adobe Illustrator; TV commercial design using Adobe Premier & Aftereffects 4.0. Req. BS in Graphic Design. \$37K. Resumes to: T. Christiana, Millionaire.com, 7 Plantation Park Drive, Bluffton, SC 29910

**Database Analyst** wanted by New Jersey based company for job locs throughout the USA. Reqd. Master's degree in Comp. Sci., Engg. and 2 yrs. of exp. in Computer Software developing and/or consulting. Respond to: HR Dept., Numbers Only, Inc., 200 Middlesex Essex Turnpike, Ste. 206, Iselin, NJ 08830. (Ref. RG 7225).

**NETWQRK ENGINEER**-- SNP Technologies is looking for a Network Engineer for its Hamden, CT office to design, test, configure and install WAN, LAN, VPN, high availability server and disaster recovery solutions. Req'd.: Bachelor's Degree in Comp. Sci., Engg., or a related discipline and two yrs. of exp. in the job offered or as a Systems Engineer. Must have exp. w/Cisco, 3Com, VPN, Firewall and Network QS. Must have Microsoft Professional, Internet and Systems Engineer Certifications. Send resume to: P. Parikh, SNP Technologies, Inc., Box MB, 1890 Dixwell Ave., Hamden, CT 06514.

**Programmer/Analyst**: create & develop software, build user interface applications, software application & backend databases using various programming & scripting languages. Req. MS or equiv. in CS or CIS w. proficiency in ASP, SQL, & TCP/IP. \$60K/yr. 40 hr/wk, 8-5. Contact Human resources, Place Collegiate Properties, LP, 101 Marietta St. NW, Ste 1050, Atlanta, GA 30303. email: job@placeproperties.com. Contact by email only.

**Jr. Software Engineer** needed for dvlpm't of s/ware applics using relational d/base, UML dsgn & DB Normalization. Exp a+. Apply to I. Hungria, Advanced Technology Front, 2001 Rte 310, Parsippany, NJ 07054.

Programmer Analyst - Analyzing, designing, developing, testing and evaluating systems for internet and object oriented applications, using JAVA, JavaScript, HTML and related network oriented tools and languages; providing tech. support, project management and troubleshooting; unit testing, monitoring performance, enhancing and modifying existing applications. Writing specifications, documentation and programs for software applications in wide range of networking environments. Min. reqs: Bachelor's Degree in Computer Science or equivalence. Must have knowledge of JAVA, internet related tools and applications and object oriented technologies. 40 hrs/wk, 9-5, \$55,000/yr. Send 2 resumes to: Global Object Systems, Inc., 3945 Riverlook Pkwy., Marietta, GA 30067.

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Full time Software Consultant responsible for defining, analyzing, developing, implementing, testing, supporting and maintaining custom software business systems. Utilizing programming languages and environments with C/C++, Visual Basic, EDI, SOL, MS, SourceSafe, Unix/Linux and business processing knowledge using SLC, CMM Level 2, and ISO9000. Must have a Bachelor's degree in Computer Engineering or a foreign degree equivalent. Must have one year in the job offered or one year in a position with same duties. Salary: \$60,000/yr. Send Resume to: Erik Gomez, I-Stream, Inc. 3103 Bee Caves Road, Suite 105, Austin, Texas 78746.

Computer Network Admin. No Exp. Reqd. Multi platform. Troubleshoot, diagnose Servers. Upgrade all hardware & software. Req: B.S. in Comp. Science or Comp. Engineering or Comp. Information. Job/Intrvw site: Lancaster, CA. Send ad and resume to Trinet Networking & Training, Inc., 2035 W. Ave K., Lancaster, CA 93536

System Analyst wanted by Computer Services Co. in Hayward, CA. Must have BS or foreign equiv in CS or related field & 2 yr exp. Respond to: HR Dept, Computerland of Hayward COH, Inc., 2252 West Winton Ave, Hayward, CA 94545. For more job opportunities see [www.computerlandsite.com](http://www.computerlandsite.com)

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MIS Engineer sought by computer case & power supply importer in Fremont to maintain company's MIS system. Send resume to Sunus Suntek, HR Dept, 47626 Kato Rd., Fremont, CA 94538.

AirFlash, Inc. is looking for a Sr. Software Engineer for its Saratoga, CA office. Position requires BS or foreign equiv in CS, Eng, or related field & 5 yr exp researching, dsgn & dvlpg comp s/w. Skill sought: C/C++, JAVA, and RDBMS. Respond to: HR Dept, AirFlash, Inc., 12900 Saratoga Avenue, Saratoga, CA 95070. For More job opportunities see [www.Airflash.com](http://www.Airflash.com)

Software Engineer (Calabasas, LA, CA) to design/test/maintain applications utilizing C, SOL, People tools, AS/400, UNIX, Visual Basic, Oracle and Sybase, evaluate systems effectiveness, recommend improvements, trouble shoot problems in programming and other project specifications. Require MS or the equivalent in Comp. Sci., Math., E.E. or in a related field plus 1 yr. exp. (or a BS plus 5yr. progressive exp.) in offered position or as Programmer/Systems Analyst. Competitive salary: 40hr/wk; Mon-Fri., 8:00am-5:00pm. Resumes to: Mr. Jasti, Global Software Solutions, Inc., 1135 Rue La Chelle Lane, St. Louis, MO 63141. An Employer paid Ad/EOE.

Lead Software Engineer. Responsible for the design, development, and testing of internet-based financial applications, which includes analysis of requirements, developing re-usable software components using Java, ASP, HTML, and Javascript, and unit testing software components. Must have B.S. in Engineering, Computer Science, or equivalent, plus two years related experience, and knowledge of Java, ASP, HTML, XML, Javascript, and Microsoft IIS Server Technology with COM components. Send resume with cover letter to Stockpoint, Inc. Attn: Ronald Stablein, 2600 Crosspark Rd., Coralville, Iowa 52241.

Computer Programmer: Work with product specialists & development teams to design, develop, test, integrate & support web-based info management software using Visual Basic, DHTML, SOL Server & Crystal Reports. Req. BS in comp sci, engg, or related tech field & 2 yrs development exp. \$59K & up. Resumes to: J. Fares, Technical Mgr, Advance Products, Reynolds and Reynolds Company, 115 S. Ludlow St., Dayton, OH 45401

International Business Analyst sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. Install, upgrade, test technical functioning, & configure ERP software programs utilizing double-byte configurations, data, & interfaces that run on Windows NT, UNIX, & AS/400 platforms, & which access DB2, ORACLE, & SOL Server databases. Requires 2 yrs. installing, upgrading, testing technical functioning, & configuring ERP software programs utilizing double-byte configurations, data, & interfaces & which access relational databases. 8am-5pm, M-F; \$83,200/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number JL-1116780.

Systems Analyst (mult openings) to dvlpg ABAP/4 prgms, SAP script layout sets, Batch Data Communication prgms & customize & carry out various transactions in Material Mgmt module; conduct systm analysis, d/base dsgn, dvlpm & implmtn of various applic sysyms PowerBuilder, Sybase, Oracle & SOL Server. Req Bach in Comp Sci, Comp Engg, Electrical or Electronic Engg, Comp Info Sysyms, Math, Comp Apps, Electronics & Comm Engg or its foreign educ equiv +1 yr exp in job offd or 1 yr related exp as Sysyms Analyst SAP, Sysyms Analyst or Sr. Engr. Related exp must incl systm analysis, d/base dsgn, dvlpm & implmtn & using Sybase, PowerBuilder & Oracle; \$54,000/yr, 40 hrs/wk, OT as reqd, 8a-5p. Applicants must show proof of legal authority to work in US. Send 2 resumes & cover ltr (no calls) to Illinois Dept of Employ Security, 401 S. State St, 7 N. Chicago, IL 60605. Ref #V-IL24735-T. Employer Paid Ad.

Software Engineer needed by Palo Alto, CA Internet Technology Co. with Masters, Engg, Comp Sci, or Math & 1 yr exp developing embedded software apps; interface classes between components; GUI's; & Active X Controls. Use object oriented programming, C++ & add'l languages. Respond to Sentius Corp, 580 College Ave, Palo Alto, CA 94306 Attn: K. Bergevin.

Full time Software Consultant to define, analyze, develop, implement, test, support/maintain custom software business systems, utilizing experience with programming languages/environments including C/C++, Visual Basic, SOL, Clipper, MS Access, and MS Sourcesafe, Unix, ISO9000 and Ingress. Must have a Bachelor's degree in Computer Engineering or a foreign degree equivalent. Must have one year of experience in the job offered or one year in a position with same duties. Salary \$62,000/yr. Send resume to: Erik Gomez, I-Stream, Inc. 3103 Bee Caves Road, Suite 105, Austin, Texas 78746.

WEBMASTER. Oversee all aspects of the architecture, design content development and ongoing service of an Internet based web site for non-profit religious organization. Convert written content into HTML documents. Utilize technologies such as Javascript, Active Server Pages, Real Audio and Adobe Photoshop within the web structure. Maintain, trouble shoot and provide security for web server hardware and software. Requires bachelor's degree in mass communication or computer related field. Send resume to Tim Rickel, World Gospel Mission, P.O. Box 948, Marion, Indiana 46952-0948.

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Employee-owned Science Applications International Corporation (SAIC), a Fortune 500 company, provides high-technology services and products to government and commercial customers. SAIC and its subsidiaries have estimated annual revenues of over \$5.5 billion and more than 41,000 employees at offices in over 150 cities worldwide. Currently, we have multiple openings at various U.S. locations for SOFTWARE ENGINEERS AND OTHER INFORMATION TECHNOLOGY PROFESSIONALS.

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1. Demonstrate ability to program and code in Visual Basic, Visual Basic Scripts, SOL Relational database and HTML.
2. Requires demonstrable ability to analyze problems and debug.

Salary: \$38,500.00 per year. 40 hours per week. Send resumes to: Department of Workforce Services, Attn: Pat Redington, Job Order # 3061123, 140 East 300 South, Salt Lake City, UT 84111.

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Sr. Database Administrator sought by computer software consulting company in Colorado Springs, CO, to work in Lowell, MA & other unanticipated job sites in the U.S., to, at a senior level, design, install, maintain, & administer ORACLE relational database management systems. Engage in database & related software application design & development. Design & establish physical database parameters. Create & implement security & back-up & recovery procedures. Engage in performance monitoring & tuning of the ORACLE relational database management systems & related software applications. Provide user support & training. Engage in project management as required. Requires Master's or equivalent in Computer Science or related field (including Business Administration). Specifically, this position requires a Master's, or foreign degree equivalent, plus 3 yrs of progressively more responsible ORACLE relational database management experience, or a Bachelor's, or foreign degree equivalent, plus 5 yrs of progressively more responsible ORACLE relational database management experience.

Salary: \$65,000/yr; M-F; 8am-5pm. (2 openings) Respond by resume to James Shimada, CO Dept of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202, & refer to Job Order No. CO4685556. Programmer, Database Information Systems: Uses Borland C++, Visual Basic, Visual C++, and OLE in a Windows NT environment to design, develop, analyze and modify information and data contained in a complex financial and insurance software database informational system to allow end users to produce hypothetical financial and insurance results based upon client's statistical information. Develops appropriate modules for manipulation of stored data using SOL database triggers, and appropriate stored procedures to insure that such insurance and financial based data are properly transmitted, accessed, and displayed in the appropriate format for financial and insurance sales presentations. Requires Master's degree in Computer Science or Computer Engineering. Hours: 8:00 a.m. 5:00 p.m. 40 hours per week at \$52,251.00 per year salary. Applicants must show proof of legal authority to work in the U.S. Job Location: Des Plaines, Illinois. Please send two copies of resume and cover letter to: Illinois Department of Employment Security, 401 S. State Street - 7 North, Chicago, IL 60605 Attention: Joanne Breaux, Reference #V-IL 24325-N, An EMPLOYER PAID AD. TO CALLS.



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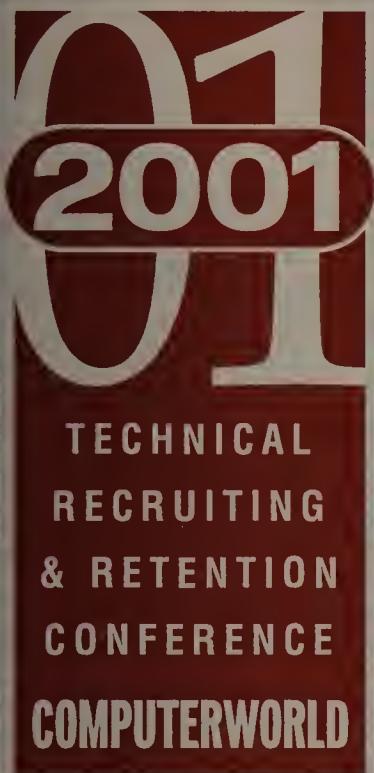
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Ken Gaffey is a staffing consultant with over 15 years of Human Resources experience in the New England high technology and financial services marketplace. Ken is an active member of IHRCA, NEHRA, SHRM, HRC, the Society of Professional Consultants, and the Human Resources Council. Ken contributes articles and book reviews to the Electronic Recruiting Exchange, Monster, HR Today, and several other professional organization newsletters and periodicals.

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### Diversity - What You Need to Do to Tap "All" the Top Talent

PRESTON EDWARDS, IMDIVERSITY.COM

Top employers benchmark how diversity has become a core value to attracting and retaining top talent and keeping a competitive edge. Moderator, Preston Edwards, Chairman and CEO, IMDiversity.com, and Black Collegian Magazine, is nationally known for his 30 year commitment to diversity education. He has been honored by numerous organizations including the 1999 Pericles Award from the Employment Management Association.

### What You Really Need to Know About Resume Management Systems or, How to Tell "Real Ware" from "Vaporware"

MARK MEHLER, MMC GROUP

The world's most competitive corporations discuss the pros and cons of choosing and using emerging technology tools and systems. Moderator: Mark Mehler, President, MMC Group. Mark is an international consultant on high-volume staffing processes, a sought after speaker at national recruiting conferences and co-author of *CareerXroads*.

### Town Hall Forum: Pundits, Puns and Pulled Punches

GERRY CRISPIN, CAREERXROADS 2000; JOHN SULLIVAN, AGILENT TECHNOLOGIES; KEVIN WHEELER, GLOBAL LEARNING RESOURCES; PETER WEDDLE, WEDDLE'S

Four internet recruiting pundits square off in a "no-holds" barred debate on the future of employment. Who are the winners and losers in the employment space?

### Internet Recruiting Strategies - TOOLS Overview:

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- Capture Tools
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- Learning Tools

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SUSAN HODGES, SEMCO

There is always something new going on in IT, but the new millennium seems even busier than usual. The internet is affecting everything that's being done and new products and skills appear daily. This session will look at the new technology in each critical area - platforms, development, data, communications and applications.

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## E-DOCUMENT / E-BUSINESS POSITIONS

170 SYSTEMS, Inc., a leading edge software products company providing advanced, web-deployed solutions that enable e-business to manage all of their information online and optimize intra-company and business-to-business (B2B) transactions, has an immediate need to fill a range of software consulting positions in an Oracle-based environment in the Boston area.

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SOFTWARE ENGINEER AND DATA BASE DESIGN ANALYST POSITIONS

1 Software Applications Implementation Technical Team Leader (with strong technical Oracle PL/SOL and Oracle applications experience in a consulting environment.)

1 Software Applications Developers (Various Levels) (with Oracle PL/SOL and Oracle applications expertise.)

Starting salaries range from \$80,000 to \$130,000 per year, together with five weeks paid time off, medical and life insurances, and a highly competitive benefits package.

Please send resume to: Ms. Lisa Treiber, HR Director, (IMSP), 170 Systems, Inc., 25 First Street, Cambridge, MA 02141. Fax: (617) 621-0955. Email: ltreiber@170systems.com Visit: www.170systems.com An equal opportunity employer

Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance and support of large volume on-line complex integrated client-server based business, financial, banking, manufacturing and other commercial application systems in a multi-hardware/multi-software environment using centralized or distributed database systems using Oracle Relational Database Management Systems (RDBMS) and related software. Design of large application systems and databases in a Co-operative Development Environment (CDE); and analysis, design and development of applications using CASE (Computer Aided Software Engineering) tools. Bachelor's Degree (or equivalent) in Computer Science/Math/Engineering/Science/Business-Commerce and 1 yr. experience in job offered or as Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 1 of A and 3 of B, or 2 of A and 2 of B. A) includes Oracle RDBMS, Oracle CASE tools (Designer, Dictionary, Generator), CDE 2, Oracle Financials; B) includes PRO\*C, SOL\*Forms, SOL\*Reportwriter, SOL\*Plus, SOL\*Menu, PL/SOL. High mobility preferred. 40 hrs/week, 8 am - 5 pm. \$53,098 - \$75,000 per year. Qualified applicants should contact or send resume to Mr. Terry N. Faust, Manager, Washington County Team PA CareerLink, Millcraft Center, Suite 150LL, 90 West Chestnut Street, Washington, PA 15301-4517. Refer to Job Order #WEB 141773.

Software Engineer and Senior Software Engineer Positions to design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience in job offered or as a computer professional as well as one year of skills in field. Bachelors or Masters degree in one of several limited fields: Computer Science/Apps, Engineering, Chemistry, Math, Physics, or scientific or business related field. Will accept Bachelors degree with five of progressive experience. Salary: \$65,000 to \$105,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Rapidigm, Jaime Lopez, 4400 Campbells Run Road, Pittsburgh, PA 15205.

RDBMS: DB2, Informix, Oracle, FoxPro, MVS, Novell, UNIX, VAX/VMS, Windows, APT, Crystal Reports, C, C++, COBOL. Oracle RDBMS: Designer 2000, Developer 2000, Oracle RDBMS, Oracle Applications, SOL\*Plus, Pro\*C, PL/SOL, SQL\*Forms, SOL\*Reports. GUI and Internet Applications: Windows 95, Windows NT, Visual C, Visual C++, C, C++, Visual Basic, PowerBuilder, TCP/IP, HTML, MFC, CGI, MTS. Mainframe: IBM3090, IBM ES900, MVS, IMS, CL/400, CICS, TSO, VSAM, COBOL, JCL, AS/400. PeopleSoft, SAP or Baan

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Database Administrator (2 openings) to provide guidance to clients and technical/functional consultants throughout various stages of deployment of the Oracle database and applications. Will perform daily tasks such as user maintenance, resource allocation, security implementation, and performance tuning; perform periodic tasks such as software maintenance, backup (archival of data) and recovery; install and configure the Oracle Applications (Smart Client, NCA), create and upgrade databases, and size databases according to business requirements. Will assist clients with data backup, performance tuning, storage allocations and maintenance, capacity planning, user installations, software upgrades, application of patches, detailed database sizing, data archival and retrieval, and database administration training. Will provide technical expertise in the conversion of legacy data to Oracle Applications environment. Requirements: Bachelor's degree in CS, Math, Elec. Eng., or Comp. Eng. & 1 yr. experience in job offered OR 1 yr. experience in Database Administration. Position requires ability to travel on short notice 25% to 50% of the time to client sites throughout Dallas area, as well as to Sapient offices and client sites in the United States. Sal: \$75,600/yr; 9a-5p. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O.# TX1154234. Ad paid by an Equal Opportunity Employer.

iStructure Database Technologies, Inc. is seeking qualified individuals for the following positions in the Waltham, MA area:

Database Administrator: Will perform backup, recovery and tuning of Oracle or ADABAS databases as well as system configuration and disk storage management. Will create initial software installations, resolving database errors and failures, managing system access, auditing activities and resource utilization, and generating database objects using ADABAS in a mainframe environment; or Oracle 7.X, 8.X; or IMS in a mainframe, UNIX or NT environment.

Oracle Application Developer: Will use Oracle's PL/SOL and Designer/Developer 2000 Suite, and Java to plan, develop, and implement of client applications, and assisting in the preparation of project work plans, including the determination of the project time lines, resource requirements, critical design review points, and deliverables to the customer.

The successful candidate will possess strong technical and communications skills, be a team player, understand their role in the development of applications, and take responsibility for their own actions and work effort. Experience with other RDBMS, Client server tools and the web a plus.

Microsoft Applications Developer: Responsible for the planning, development, and implementation of client applications, assisting in the preparation of project work plans, including the determination of the project time lines, resource requirements, critical design review points, and deliverables to the customer. The successful candidate will possess strong technical and communications skills, be a team player, understand their role in the development of applications, and take responsibility for their own actions and work effort. At least two years development experience with Visual Basic, Visual C++, Microsoft Exchange, SOL Server, and Internet/Intranet deployments is a must. Enterprise-wide application of the entire suite of Microsoft products is a definite plus.

Please send resume via email to: [i-structure.hri@i-structure.com](mailto:i-structure.hri@i-structure.com), or by letter to Amy Ostrand, 13710 FNB Parkway, Suite 400, Omaha, NE 68154.

## SOFTWARE SUPPORT FOR STRATEGY CONSULTING

Decision Architects, a Monitor Group Company, providing customized software solutions in support of strategy consulting, has an immediate need to fill a range of software, database and IT positions in the Boston area.

The following positions all require a Bachelor's degree (or equivalent) in Computer Science, MIS, Business Administration, or similarly relevant field, and 2-6 years' relevant experience to include the requirements described below.

PROGRAMMER - ANALYST and DATA BASE DESIGN ANALYST POSITIONS

• Application Development Analyst (Business Systems) with experience building software-based business analysis models, and a functional understanding of accounting.

• Data Base Design / Application Consultant with experience in software development, data base admin/ design, performance-tuning, Oracle Lite and Express, and a functional understanding of financial accounting.

Starting salaries range from \$58,500 to \$77,500 per year, together with two weeks' paid vacation, medical, dental, life and disability insurances, and other industry-competitive benefits.

Please mail or fax resume to: Ms. Ashley Kiersten, Recruitment Manager, Decision Architects, 2 Canal Park, Cambridge, MA 02141. Fax: (617) 761-3677 Email: [Hire\\_Me@decisionarc.com](mailto:Hire_Me@decisionarc.com)

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Data Warehouse Architect [multiple openings]: Working independently, develop data warehouse data models to store, manage and analyze and report data from operational systems. Conduct data analysis and integration activities. Direct and approve data transformation rules and confers with client on their needs. Coordinate the use of multiple data warehouse and data mart models to store source system data. Positions require BS in CS, Engineering, or foreign equivalent, or related field and 5 years as a Data Warehouse Architect or 5 years of business system data model development experience. Experience must include 1) data integration analysis, 2) data modeling, 3) data architecture development, and 4) Computer Aided Systems Engineering (CASE) tools.

\$85,000 per year. Job site: Denver, CO. Application is by resume only. Send resume to Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117, and refer to order number CO 4684928.

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# Diversity in IT Careers

Ajilon

Towson, MD

In three decades of operation, Ajilon has long considered itself a diverse company. "We are diverse in terms of people and in terms of how we work," explains Samantha O'Neill, corporate human resources manager. "We believe the challenge is working with personalities of individuals, not just what visually makes them diverse."

Among the significant challenges for Ajilon is that there are varied cultures and nationalities represented. To assure that employees find a niche, Ajilon has a buddy system in which a current employee helps a new, foreign-national employee adapt to work, but also to living in a new country. "Because we are a consulting firm, helping people link together is a constant challenge. Each of our districts handles this differently, depending on the needs of employees working in this district," explains O'Neill.

"We have a reputation as an equitable employer, and that reputation alone goes a long way in attracting diverse individuals to our company," O'Neill adds. "We believe that ongoing learning is one of the most important aspects of attracting and keeping talented individuals. We offer this through a variety of programs, including Virtual University – an online training program that employees can use to increase their technical or business skills. We know that strong leaders are essential to an organization that values individuals and assures that they can continue to develop, so we place a lot of emphasis on selection of our managers."

Ajilon has more than 50 offices across the United States, each with openings for specific positions. However, O'Neill says that the company is looking generally for individuals with development experience in Java, Visual Basic, C++, and Unix, data warehouse architects, security consultants, web designers and software quality assurance engineers.

"Our role, in this day and age, is to help people learn to work with one another," O'Neill adds. "That's why Ajilon is a great place to be."

Global Crossing

Rochester, NY

"Our company embraces people from all walks of life who have a contribution to make." That's the bottomline at Global Crossing, according to Marie

Philippe, director of diversity. "We are interested in people of all backgrounds. What counts is the contribution they can make to our common goals – developing our products, supporting our business, making a profit."

With its global operation, the company takes its valuing of diversity philosophy beyond the walls of its building. "We want to embrace valuing of diversity in our communities, as well," Philippe points out. "In general, we believe that valuing diversity is understanding beyond our own experiences. That may be easier for someone who has traveled or lived in other cultures. Now if we can just find a way to create more exchanges between cultures and countries so that employees can understand on a personal level."

Among the goals Global Crossing has set is to do a better job of developing from within the diverse workforce that exists. "We are establishing a mentoring program that will allow the employee to spend 12 to 18 months with an individual and then move to another mentor. This helps develop the comprehensive skills so needed by the business, but also helps us deal with the fast-moving environment we are in. There's a wealth of information and wisdom to tap into."

Global Crossing has 17,000 employees worldwide. During 2001, the company will be hiring additional engineers and technology experts to help with the continued development of a fiber optic network that spans the globe. "We need people who understand networks, telephony and the development of new technologies around the communications sector," Philippe says. "We look for people who are team players, who have the vision to think beyond the immediate answer."

Jobs are available in Rochester, Denver, New York City, Beverly Hills and New Jersey. "We believe that our ability to embrace a fully diverse workforce helps us attract the top talent," Philippe adds. "This isn't about correct rhetoric. We are living what we believe."

## IT careers

For more job opportunities turn to the pages of IT careers.

- If you'd like to take part in an upcoming IT careers feature, contact Janis Crowley, 650.312.0607 or [janis\\_crowley@itcareers.net](mailto:janis_crowley@itcareers.net).
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**Ask leaders of major IT organizations what the biggest challenges are for the future, and you'll hear more and more about people. About opening the minds of management and the organization to the broadest possible scope of understanding diversity, beyond the visible differences of age, gender or the color of skin. Until this understanding is a reality, individuals can't attain their highest levels of performance, the best ideas can't percolate through a company, and firms will continue to experience the high cost when someone with talent goes unnoticed.**

# IT careers in southern california

The 21st century version of the Gold Rush is the Silicon Rush. California's economy has grown faster than the rest of the United States for the past four years. Even with dot-com failures, the unemployment rate is down, incomes are up, and jobs are aplenty from the Bay Area south to San Diego.

In fact, many high tech experts will tell you that web development and the dynamic technology needs of the entertainment industry are concentrated in Southern California, where Silicon Beach is fast becoming a rival to Silicon Valley.

## Day Network Los Angeles, CA

Increasingly it's the traditional companies who are turning the Internet into a viable tool. Bricks and mortar operations are expanding their businesses on to the web, and that's where Day Network comes in. Humberto Quintanar, vice president for professional services, says the company distinguishes itself by providing viable web development software that allows a business to realize any Internet initiative and integrate internal and external initiatives. The Day solution is extremely user-friendly — customers can maintain the site themselves. "It's a unique product we call a Global-Ready Enterprise web platform that allows the customer to integrate a variety of modules into a Web-enabled system," he explains.

Day Network in the United States has a research and development operation that works alongside the corporate R&D operation in Switzerland. "This means we can offer employees the opportunity to dive into the guts of our product and imagine how it can be even better. Because of our product, you have the chance to do custom work for customers, too," says Quintanar.

Recently the company developed the Rush Limbaugh web site, which now receives 3 million hits per day. "The customer can make changes to the web site quickly and easily, without additional programming," Quintanar explains. "The Rush Limbaugh site is updated by non-technical staff at least once a day. That's the beauty of our product."

Day Network plans to hire additional project managers, developers in Java and Java Script and junior positions. With just over 150 people in the United States by year-end 2000, Quintanar says Day Network U.S. will expand by 100 percent in 2001. "My goal is to put together the best consulting development group in the industry. We are looking for people with technical skills, but also people with the ability to communicate with the customer, to take ideas and turn them into a plan the customer can understand. We look for people who take ownership of their work and are proud of the product they produce."

In addition to a strong base compensation package, Day Network comes with the backup resources of a global operation. "The company has been in business since 1993 in Europe and came to the United States in 1998," Quintanar says. "We are a publicly held group in Europe, so we are not a typical start-up. Our task is to grow the client base here in America. To do that, we need people who are happy with the technological challenges we offer, who are continuously learning and who aren't afraid to handle any task."

## Farmers Insurance Group Los Angeles, CA

Among the most strategic users of Internet-based technologies in the United States are insurance companies. Offering auto, home, business, life and professional liability lines of products, Farmers Insurance Group has more than 18,000 employees caring for 16 million policies.

"Technology plays a vital role in assuring the company's more than 15,000 agents have the information they need, when they need it, to provide customer-focused service," explains Gail Padrick, director of IT planning and operations at Farmers.

Recently, Farmers launched its agency dashboard, an Internet site that provides agents with tools and resources to maximize productivity and effectiveness across multiple lines of business. In late January, Farmers will launch its Customer Restoration Network. "Integrating numerous technologies, including call center telephony, customer relationship management, Internet and imaging, the Customer Restoration Network will revolutionize Farmers' claims handling process — customers will make one phone call to our customer care center, putting into action all the activities to restore the customer's life to order as seamlessly as possible," says Padrick.

Farmers' IT group is growing, hiring 200 staff members in 2000 and establishing two new departments — one for emerging technology and one for enabling e-business initiatives. Farmers plans to hire about 130 IT professionals in the coming year. "We're already beginning work on the next releases for the agency dashboard and the Customer Restoration Network," Padrick adds. "We'll also web-enable our commercial lines system. We need people with development and support skills, including Java, HTML, UNIX, WebSphere and Siebel."

"One of the things that sets Farmers apart is our people-centric environment, which begins with our CEO who started here 30 years ago as a claims trainee," says Padrick. "His loyalty and passion for Farmers is palpable. The second thing is our CIO, Cecilia Claudio. She is the Cinderella who has brought Farmers IT to the ball. She has transformed the IT organization into a strategic business partner."

Farmers invests in people, too, with educational/development programs. Besides the corporate tuition reimbursement program for external classes, the IT group offers Internet-based training for several hundred technical and soft-skill courses. IT staff are encouraged to spend at least five hours per month pursuing education or training.

"Our work is challenging, risk-taking is encouraged and results are recognized and rewarded," adds Padrick.

## IT careers

For more job opportunities with Southern California firms, turn to the pages of **ITcareers**.

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Defense,  
continued from page 1

charged with mapping the security plan could give the military the option to outsource the job. By outsourcing intrusion detection, the Defense Department will go a long way toward legitimizing for the commercial environment the still-controversial idea of handing over large, sensitive

**Today only a fraction of the military's overall networked systems are guarded by any form of intrusion detection.**

security tasks to service providers.

The Defense Department has more than 25,000 computer networks that handle everything from weapons systems command-and-control to inventory to payroll. Roughly 11% of Defense Department networks, such as satellite links, are considered mission-critical.

"Under this draft policy, every Defense Department entity will need to have a computer network-detection service provider, which could be a Defense Department entity or a commercial entity," says Richard Hale, chief engineering executive for information assurance at the Defense Information Systems Agency

(DISA). DISA is responsible for defining the intrusion-detection plan.

Whether the Navy, Army or Air Force should buy commercial intrusion-detection software or entrust network protection to an outside service provider should be decided "on a case-by-case basis," Hale says.

#### Pioneered intrusion detection

The military helped pioneer intrusion-detection systems by building its own software from scratch about five years ago. But since then, various parts of the military have deployed products from vendors that include Internet Security Systems, Axent (just purchased by Symantec), Cisco and Network Ice. Today only a fraction of the military's overall networked systems are guarded by any form of intrusion detection.

When the final decision on the mandatory intrusion-detection systems will arrive is unclear. But deliberations taking place among the military's Joint Chiefs of Staff underscore their determination to do whatever it takes to prevent hackers and denial-of-service attacks from disrupting its networks.

Some defense-related agencies, such as the secretive National Security Agency (NSA) in Fort Meade, Md., already require round-the-clock monitoring of computer hosts and networks.

"Every system within NSA is monitored," says Charles Kolodgy, IDC research manager for Internet security. He left NSA last summer, where he evaluated intrusion-detection products for the intelligence

agency, to join research firm IDC, where he now oversees market research on the same subject.

"In the Defense Intelligence Agency, it's the same sort of situation," Kolodgy adds.

One difficulty in deploying intrusion-detection software is that it must be regularly updated to include new "attack signatures," because new hacker exploits are discovered all the time. In addition, intrusion-detection software can record "false positives," a false alarm about trouble, and software occasionally needs to be fine-tuned to work correctly.

These types of challenges, along with the difficulty in hiring security experts to manage intrusion detection, is spurring security services in which intrusion detection is done remotely in the service provider's data centers (see graphic, below) or with hired help on site.

#### Outsourcing security

The NSA, which last year created a stir when it declared it might outsource security for internal servers and networks, is on track to outsource its security, having issued a request for proposal that could be awarded by spring. Due to the sensitivity of the project, only three systems integrators — Computer Sciences Corp. is known to be

among them — are allowed to bid on the undertaking.

Not all attempts by the federal government to put large-scale intrusion-detection systems in place have succeeded.

It was a year ago that President Clinton unveiled his goal of creating the Federal Intrusion Detection Network as part of what was called the National Plan for Information Systems Protection. FIDNet, as it was called, was envisioned by the White House as a governmentwide intrusion-detection network to monitor activities across

civilian and defense networks.

The idea, though, generated a firestorm of criticism from civil liberties groups that argued FIDNet's monitoring of citizens would constitute an invasion of privacy. Although

#### Cultivating security service

**The Yankee Group says intrusion-detection as a service is in its infancy — earning some \$200 million last year. But the research group says the services will generate \$450 million this year and up to \$2.6 billion by 2005.**

the General Services Administration issued a draft RFP for FIDNet, GSA says the idea has been shelved.

Others are just not sold on the idea of outsourcing security to services providers.

"We've opted not to go with managed security," says Jeff Hormann, director of information security at Metro-media Fiber Network, which is building its own network-monitoring facility to be manned by its employees around the clock.

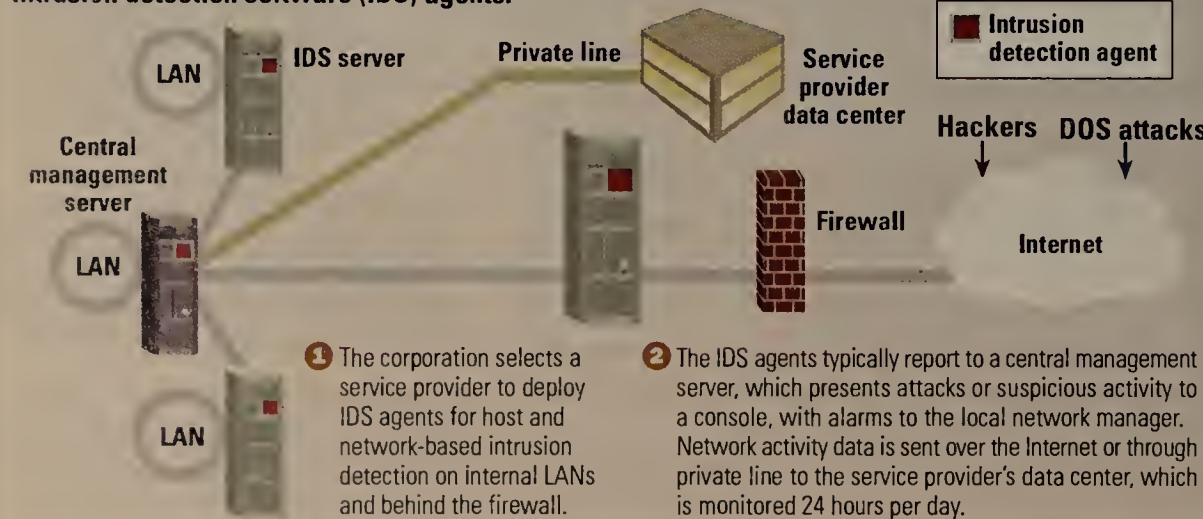
"With managed security services, you're giving away the keys to the castle in some respects," he says.

Hormann points out any organization that wants to take advantage of managed security services has to share detailed knowledge about its operations so that intrusion-detection systems can be properly used. □

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## Outsourcing security

Managed Intrusion Detection Service can be provided in many ways. Here is one example using intrusion detection software (IDS) agents:



Linux,  
continued from page 8

drives], and the SCSI layer deals much better with errors and also scales better than before," says Alan Cox, a kernel hacker in Wales. "Both of these [features] are obviously important in large data centers or when running databases."

Cox, a well-known developer in the Linux community, is responsible for maintaining the patches to the kernel and wrote much of its symmetric multiprocessing and networking code.

"The [2G-byte file size of the previous kernel] was a fine limit until 45G-byte disks became available," Cox says. "Video editing and large databases are both using very large files now, so Linux 2.4 supports about a terabyte or so per file."

Users are welcoming that extra oomph.

"I've used a few files over 2G-byte [in size], mostly restored archives and video files," says Bill Rugolowsky, a programmer for a New York securities firm. "As I start using Linux for more data modeling, the data sets will no doubt grow to that size."

The 2.4 kernel also makes it possible for 4.2 billion users to be connected to a Linux net.

"This is useful for large sites, in particular where [Lightweight Directory Access Protocol] is used to join networks with a single user database," Cox says.

In addition, the point-to-point protocol, which is part of the Linux kernel, has been rewritten to support DSL and broadband services, as well as ATM. A server running the Linux 2.4 kernel can also contain up to 20 drives and 16 Ethernet adapters, "allowing sites with a large number of subnets, as well as those trying out multilink setups, to increase bandwidth," says Brian Ward, a systems administrator at the University of Chicago. Multilinking allows the use of multiple devices or circuits simultaneously to speed communications.

The kernel also supports up to 64G bytes of RAM, important for "large servers, where network, memory and disk access all tend to converge," Ward says. "Even an improvement of a few milliseconds means a lot when there are 200 processes doing the same thing." □

## Bush, continued from page 1

"Whether Bush or Gore had won, the government was going to have to deal with these issues," says Richard Wiley, an advisor to the Bush transition team and a partner with law firm Wiley, Rein & Fielding.

Although Bush has not clarified his positions on many Internet issues, Wiley expects he will work through the private sector as much as possible.

"I don't see regulation of the Internet as something this administration is going to favor, and that's good," Wiley says. "They're going to try to avoid it where they can, but some of these issues are going to involve if not regulation, then some understanding and oversight."

Indeed, the Bush administration will confront an unprecedented number of Internet issues, and pressure is mounting for federal government action on many of them, including international trade barriers, broadband access and law enforcement authority.

"There will be much more debate this year about whether to keep a hands-off approach to the Internet," predicts Daniel Ebert, executive director of Net-Coalition.com, a lobbying group for Internet companies that includes AOL, Amazon.com and Yahoo.

"Given the people Bush is bringing into his administration, I think he will continue to view the Internet as a very dynamic and important part of our economy," Ebert says.

The first Internet-related issue that the Bush administration will likely encounter is online privacy. Capitol Hill

watchers expect as many as two dozen online privacy bills to be introduced by the 107th Congress, with hearings anticipated early this year.

A consensus is emerging for the passage of a bill that will require companies to notify consumers about their privacy policies and to let them opt out of information gathering. But fights are looming over how notice and choice are defined, how the law will be enforced and whether federal law will pre-empt state laws.

Some observers view online privacy as an opportunity for Bush to take a leadership role on a bipartisan issue with much momentum.

"The Clinton administration took a wait-and-see approach, a self-regulatory approach to privacy. But many of the consumer groups are now saying it's time for the government to get involved," says Rebecca Whitener, executive vice president at Fiderus, a North Carolina privacy consulting firm. "Business also recognizes that something needs to be done to close the consumer confidence gap."

Another issue that may come to the forefront quickly is copyright protection on the Internet. The movie, music and book industries are watching a lawsuit against Napster, the Internet file-sharing service. If Napster wins, these industries will likely push for modifications to the 1998 Digital Millennium Copyright Act.

"The issue is whether Napster is fair-use copying or not," says Bob Yoches, a partner with Finnegan, Henderson, Farra, Garrett & Dunner, a law firm specializing in intellectual property. "The lower court says not.

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## Federal 'Net policy posts

### Many key positions remain unfilled:

Position	Contenders
Chief information officer*	Unknown
Commerce secretary	Donald Evans nominated
Patent & Trademark Office commissioner	Unknown
National Telecommunications and Information Administration secretary	Unknown
Federal Communications Commission chairman	Michael Powell
Federal Trade Commission chairman	Orson Swindle
Attorney general	John Ashcroft nominated
Antitrust Division assistant attorney general	Unknown
U.S. trade representative	Robert Zoellick

\*New position under consideration.

## Net policy issues at a glance

### Bush's positions on many issues are unclear:

Issue	Description
Antitrust	'Net industry favors fewer conditions on mergers and business-to-business exchanges.
Broadband access	ISPs seek open cable systems; Baby Bells want restrictions removed.
Copyrights	Movie, music and book industries fear Napster; 'Net industry favors free content flow.
Internet tax	Moratorium ends in October; 'Net industry wants another extension.
Law enforcement	Feds pursue monitoring capabilities, sparking 'Net industry, civil liberty concerns.
Online privacy	Consumers seek protection; 'Net industry fears onerous regulation.
Trade	'Net industry fears European Commission, Asian content restrictions.

The appellate court hasn't spoken yet. That issue could be remedied by legislation."

Less visible but perhaps more contentious is how accommodating the Bush administration will be to Internet content restrictions from the European Community and Asian nations. The Clinton administration, for example, negotiated the so-called Safe Harbor program for U.S. firms to minimize the impact of stringent European online privacy laws. Some observers hope the Bush administration will take a harder line.

"How the Europeans regulate the Internet is critically important," says Robert Cresanti, senior vice president and general counsel at the Information Technology Association of America (ITAA). "I think Safe Harbor is going to crumble, and then we'll be looking down the barrel of trade problems with the Europeans."

Industry executives want to make sure Internet-based trade is not hampered by restrictive laws in other nations.

"The Bush administration has to figure out how it is going to

represent the American version of a very open Internet," says Marty Abrams, executive director of the Center for Information Policy Leadership at Hunton & Williams.

Because of its conservative leanings, the Bush administration is expected to oppose Internet taxation and promote a less-aggressive position on antitrust issues. Industry observers expect more mergers to be approved and with fewer conditions. High-profile cases against companies such as Microsoft and Intel are less likely. And business-to-business exchanges that were bogged down with questions by the Democratic-led Federal Trade Commission may get a green light.

"The Bush administration may be a little more reluctant for the government to intervene, but I don't see a 180 degree shift in direction on antitrust," says Albert Foer, president of the American Antitrust Institute. "I'm working on the assumption that there will be a tradition of law enforcement that continues."

Meanwhile, federal IT execu-

tives hope the Bush administration will continue to support the e-commerce and Web initiatives started by the Clinton administration, such as selling Treasury bills online and the FirstGov portal to government resources.

"Many of these issues we have dealt with — such as privacy, security and electronic government — are clearly bipartisan and have gained support from both parties in Congress," says Jim Flyzik, vice chair of the Federal CIO Council and deputy assistant secretary of the Treasury Department.

One remaining question is who in the Bush administration will handle Internet policymaking. Among Bush's cabinet picks, no one has emerged with the level of enthusiasm for the Internet exhibited by Vice President Al Gore.

"Vice President Gore was a stellar leader in this area and a forward-thinking person. He also had a substantial amount of authority," Cresanti says.

While the ITAA has applauded the nominations of John Ashcroft for attorney general and Spencer Abraham for Energy secretary, the industry group admits it's unclear what impact these appointments will have on Internet policies.

"I don't see [Ashcroft and Abraham] as being technology advocates ... but they are well-reasoned people, and they will advocate for industry overall," Cresanti says.

"I'm less concerned that there is a poster child for the digital economy vs. people who really understand the overall economy," agrees Fred Cate, director of the Information Law and Commerce Institute at Indiana University.

In general, Internet industry observers seem optimistic about the Bush administration.

"There's a slight chance that agency heads will be a little more free-market oriented and a little less regulatory focused," says Connie Correll, director of communications at the Information Technology Industry Council, which has Cisco and Nortel Networks as members. "But overall for our industry, the Clinton administration was very helpful, and we anticipate the Bush administration will be, too."

Network World Senior Editor Ellen Messmer contributed to this report.

## Data over the horizon

ver heard of black holes? These cosmic curiosities appear when a massive star more than eight times the size of our sun runs out of gas. Yep, once there's no more nuclear fusion, the inexorable forces of gravity take over.

Now depending on all sorts of cosmological factors — what it's made of, how hot it is, whether any astronomers are watching — the ginormous mass might become a white dwarf; a dim, super-heavy (one teaspoon of its material weighs about 6.5 tons) object. Pretty strange. Such is the nature of Sirius B, the companion of the star Sirius, the brightest star in the sky other than the sun (the star is also called Canicula, the Dog Star, Aschere or Alpha Canis Majoris).

Alternatively, it might become a neutron star. Neutron stars are the result of these honking big stars collapsing and then exploding. If what's left is more than 1.4 times the mass of our sun, it collapses under its own gravitational force into what is one big neutron. Very strange and damn heavy: One teaspoonful weighs around 100 million tons.

But if what's left after the explosion is more than about two solar masses, then the collapse keeps going and you wind up with what the chaps in white coats call a "singularity" — an infinitely dense mass that occupies zero volume. And around such a thing there is something called an "event horizon."

Anything, even light, that crosses the event horizon is sucked into the black hole never to be seen again, and consequently nothing ever comes out of a black hole. Just about as strange as things get without delving into quantum mechanics ...

I am telling you all this fascinating astronomical stuff because NASA has huge data archives that have crossed the IT equivalent of a black hole's event horizon.

It turns out that much of NASA's unbelievably huge horde of data

from its various programs is on magnetic tape, and that tape has a shelf life of no more than 10 years. The problem is that the labor required to move the old data onto new, more stable media is so vast that even if NASA could copy tapes at an impossibly fast rate, it would still take more than 10 years (already more than the remaining life of the tapes). And, as NASA is accumulating data at an incredible and exponentially increasing rate, the problem is not going to be solved.

Thus it is guaranteed that irreplaceable observational and experimental data will be lost forever (although it does raise the question of whether, given the huge number of tapes, anyone would have ever looked at the data anyway).

What struck me about this problem is that NASA is not alone (sounds like an "X-Files" episode). Out in the far reaches of the corporate world are hundreds of companies accumulating data at rates that approach and occasionally exceed NASA's. What's happening to this information?

For legal and operational reasons, data cannot be disposed for periods that range up to decades. While I'm sure that many companies routinely clean their house of useless and obsolete data once the operational and legal requirements have passed, I'll bet that a significant proportion is retained in perpetuity and mostly in obscurity.

Already we have countless acres of storage holding archived material that will never be used or even remembered, and we are adding to the pile at an exponentially increasing rate.

Is all this data doomed to languish in obscurity in vaults of rotting tapes? Will the rotting tapes be replaced in the fullness of time with dusty stacks of delaminating, cracking CD-Rs and DVD-Rs?

You should be concerned about the cost to your company in all this. The longer you take to get a handle on the problem, the more you will pay and keep paying for data that has quietly and irrevocably slipped over the storage event horizon.

Strange physics to [nwcolumn@gibbs.com](mailto:nwcolumn@gibbs.com).



M A R K  
G I B B S



### 'What is it,' continued from page 1

Bob Metcalfe invented Ethernet, knows something about revolutionary technology and has also seen Ginger. He predicted on national TV that it will be more important than the Internet — above a nine on a scale of 1 to 10 — and that we will probably own several.

That's what we learned from news reports last week.

What we didn't learn — and may not learn until next year — is exactly what this dang thing is. That leaves the door open for colossal disappointment, but we can always write that column another day.

You can be sure Ginger will not play a meaningful role in your network, unless you count carting employees hither and yon ... and we're not even sure about that, despite conventional wisdom that Ginger is a personal transport vehicle.

Harvard Business School Press, despite not knowing what Ginger is either, shelled out \$250,000 for rights to a book about it and Kamen. He's a notoriously eccentric National Medal of Technology winner, best known for inventing an insulin pump and a wheelchair that climbs stairs. A news story on [Inside.com](http://Inside.com) about that Harvard deal included details from the book proposal and sparked last week's frenzy of press reports, chat-room speculation and, in some circles, full-throated ridicule.

For those who haven't read about Ginger, the book proposal reportedly says it is a consumer product that will require an infrastructure of some kind; can be hand-assembled in 10 minutes from the contents of two duffel bags and a few boxes; comes in two models, one of which will cost less than \$2,000; faces potentially significant regulatory obstacles; and, requires \$100 million in capital for Kamen's New Hampshire company, DEKA.

Here's the most telling clue: Kamen says the "core technology and its implementations" will "have a big, broad impact not only on social institutions but some billion-dollar old-line companies." In addition, he says Ginger will "profoundly affect our environment and the way people live worldwide. It will be an alternative to products that are dirty, expensive, sometimes dangerous and often frustrating, especially for people in the cities."

That sweeping characterization is why I believe those who are focusing on patent sketches of scooters may be missing the big picture. It must be the underlying technology, not the initial iteration, that has those who have seen Ginger rhapsodizing.

What makes this fun though is that everyone who hears about the invention quickly conjures up his own theories and doubts. Here are a couple more of mine:

- The more infrastructure needed and the more important that infrastructure is to getting maximum distribution for this technology, the less revolutionary it can be. Building a bicycle path is a major undertaking these days, so anything that's comparable to a railroad or subway in scope will face enormous difficulties born of political wrangling.

- Forget the talk about this being a new version of the old strap-on, jet-powered backpacks. If this is a vehicle of some kind and it takes a person any higher off the ground than they are willing to fall, we're talking about a gadget for daredevils, not the next Model T. Same thing applies to speed: too fast, only kids will have the stomach; too slow, it's a niche market for carless New Yorkers.

- Any vehicle that isn't useful in foul weather isn't very useful.

- Kamen, Bezos, Jobs, Doerr and Metcalfe — serious players with big-league reputations to maintain — have climbed out onto a limb here. You cannot lend your good name to this type of nuclear-strength hype without delivering a product that virtually everyone will see as worthy of those hosannas.

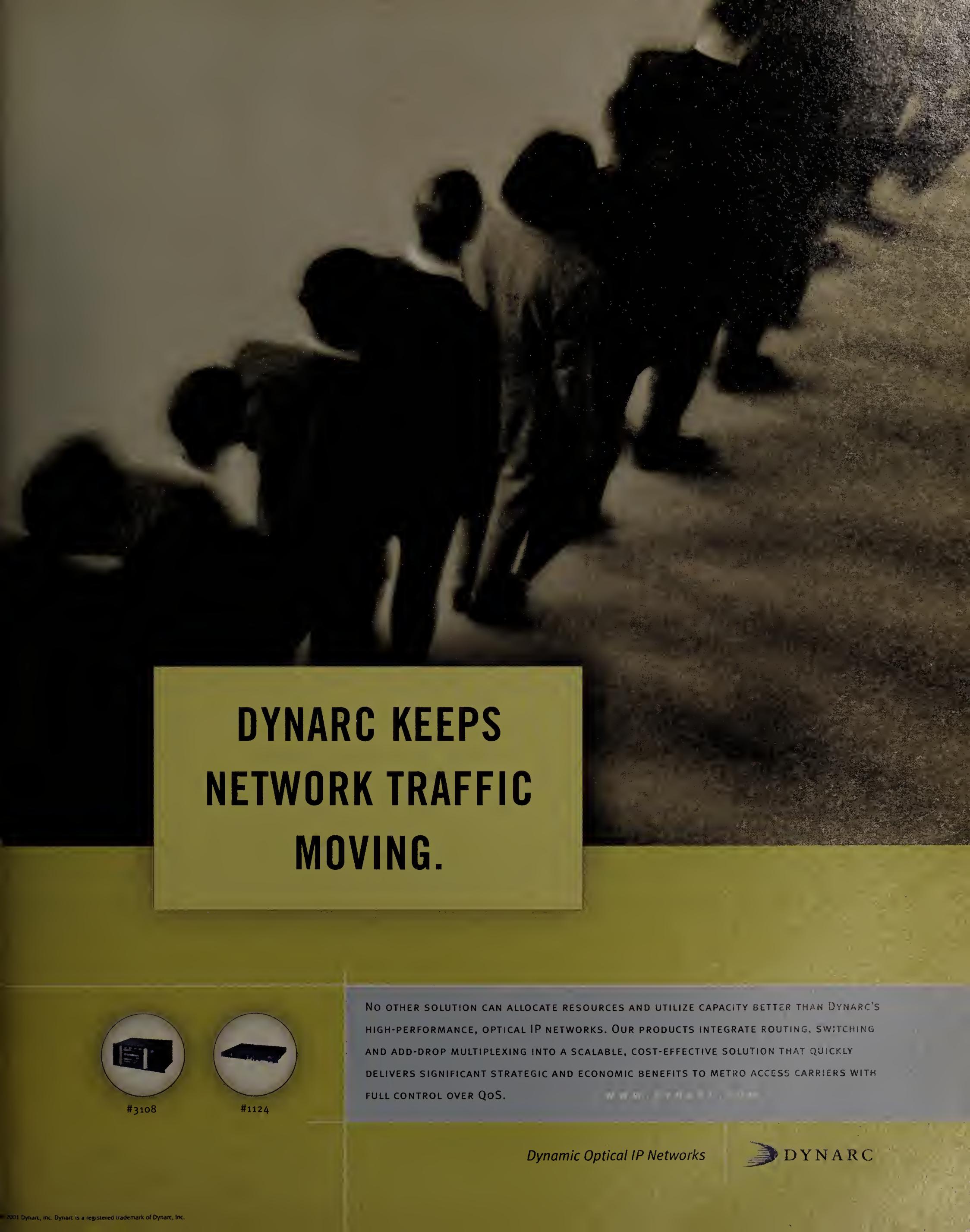
They know this and they don't want to be giggled at when Ginger debuts, which is why I'm confident they're onto something bigger than a better moped.

**What do you think of all the Ginger hype?**

**Let us know at [www.nwfusion.com](http://www.nwfusion.com).**

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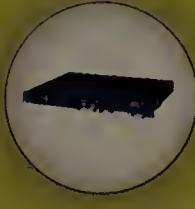
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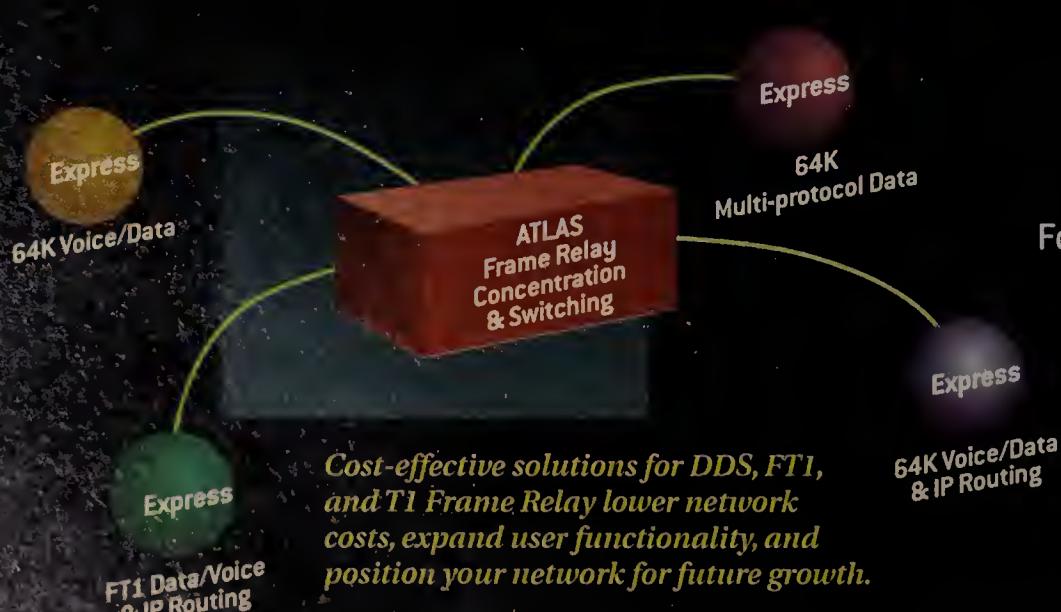
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